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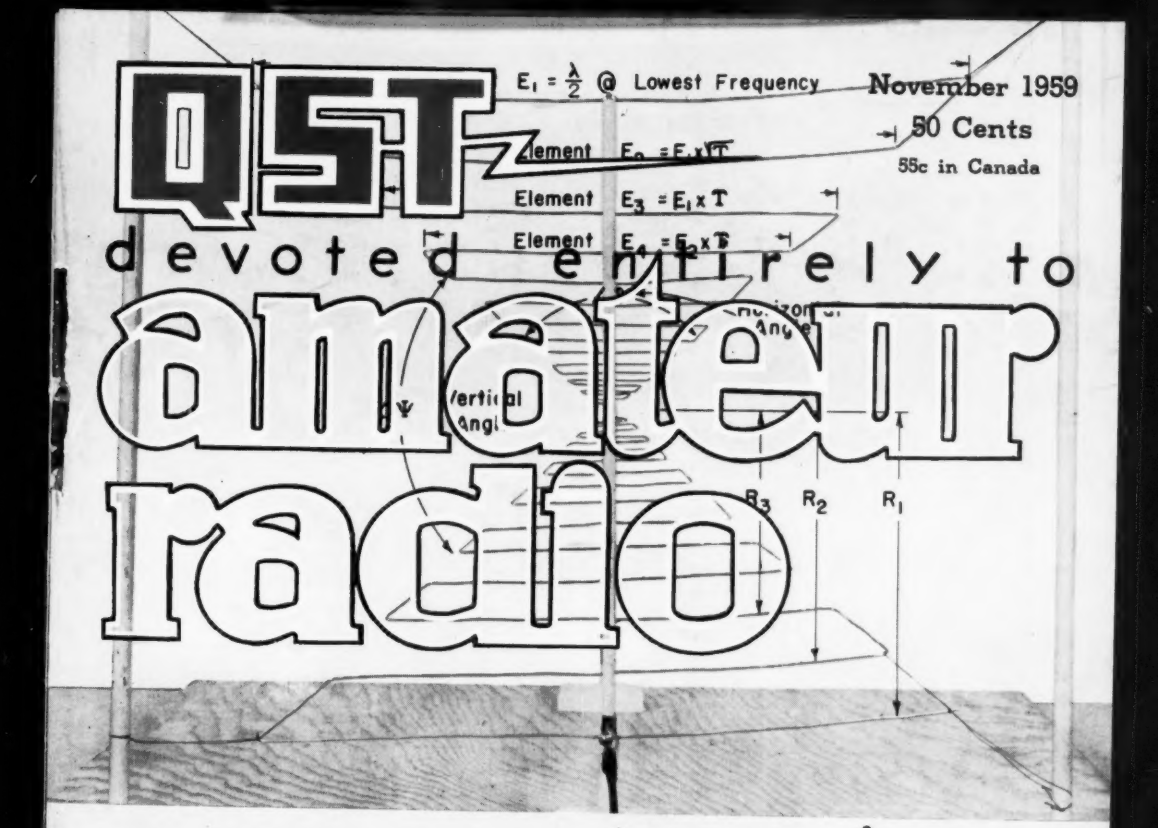

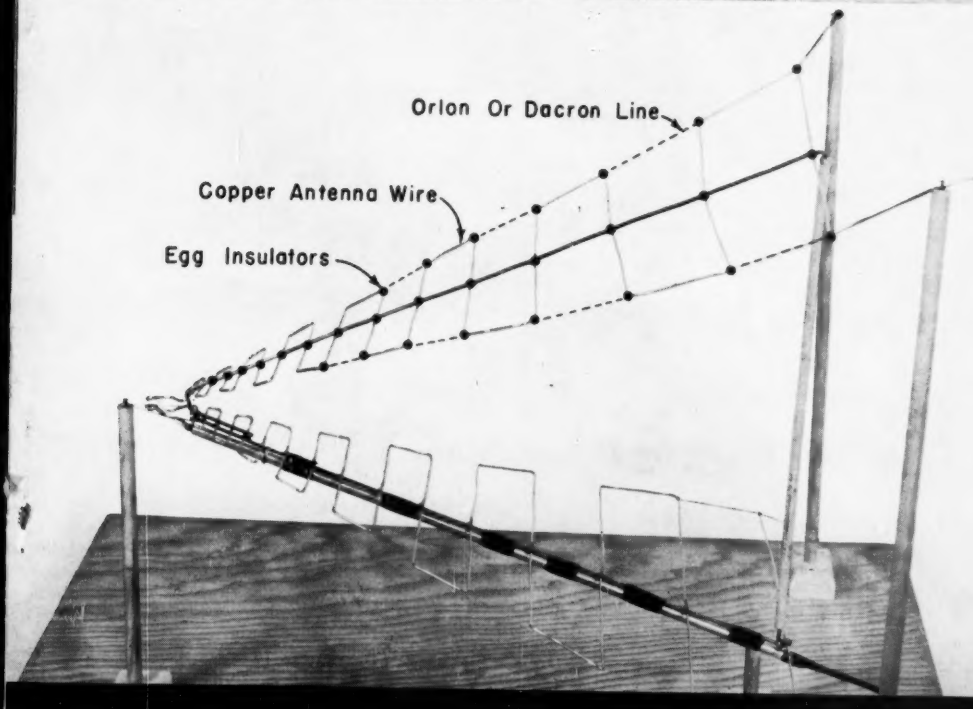

IN THIS ISSUE—LOG PERIODIC ANTENNAS

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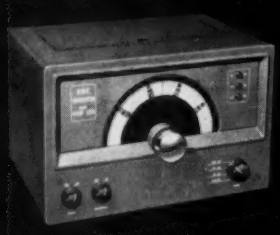

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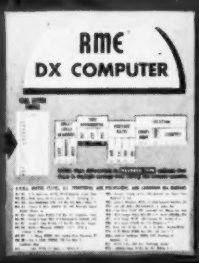

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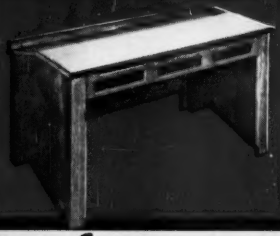

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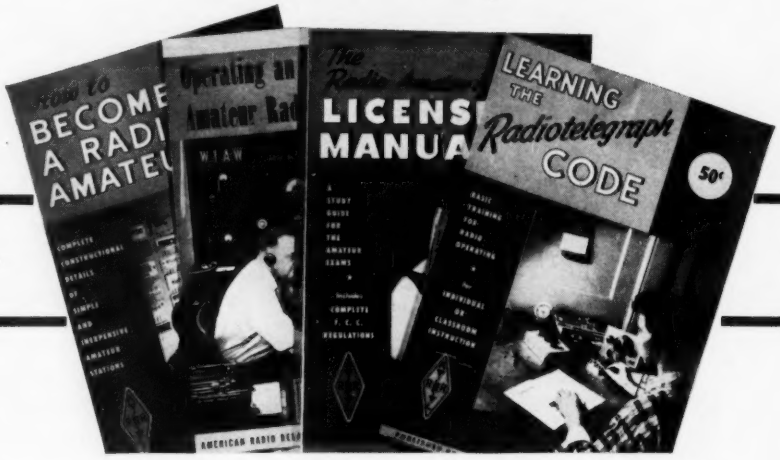

to Amateur Radio!

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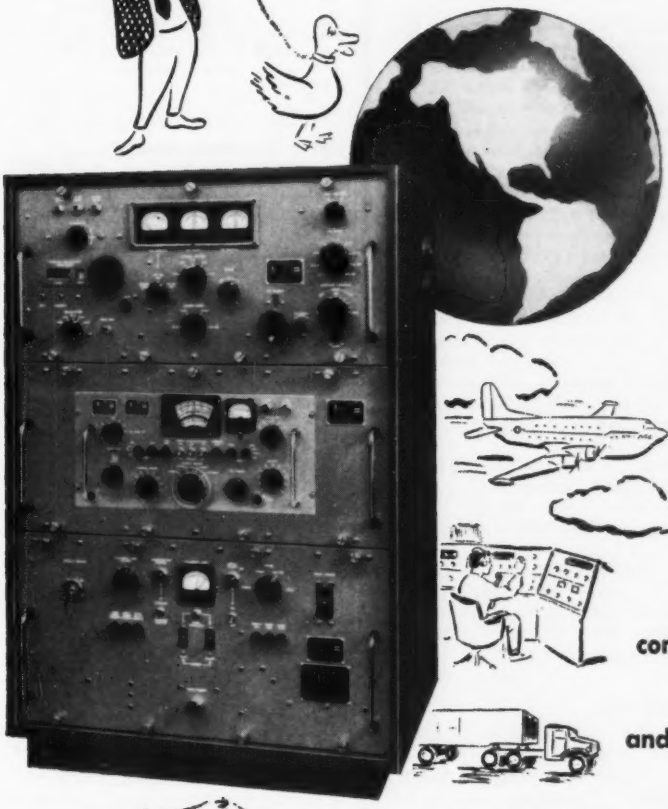

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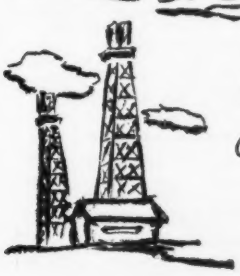

...and we were pleased to find it being used on all modes of transmission; radio teletype, facsimile, commercial radio telephone circuits, quick reaction military voice nets, multi-channel telegraph, data transmission and high speed telegraphy.

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AN/URT 17A

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

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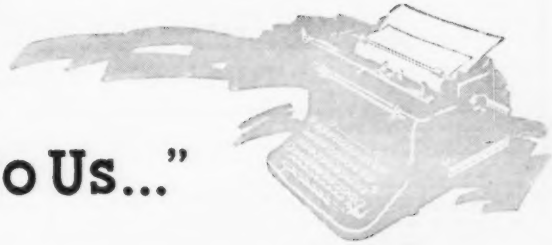


"It Seems to Us..."

QSL BUREAU

Our incoming mail lately has contained quite a few self-addressed envelopes with notes attached to the effect of "Do I have some QSL cards there waiting to be claimed?" and that means it's again time to explain the ARRL QSL Bureau System, both its headquarters and district operations.

Basically, the ARRL QSL system exists solely to help American and Canadian amateurs in getting their cards from overseas stations. We outnumber the rest of the world in amateur population by such a margin that our QSLs are not of any great value to hams elsewhere who have been on the air any time at all (except perhaps for those of us in the "rare" states and provinces). It's a good bet that few foreign hams would feel it worthwhile to spend the equivalent of a nickel a card QSLing every W or K, VE or VO worked. But with the ARRL Bureau in operation, all the foreign amateurs need do is wrap up their American and Canadian cards in a bundle, once a month or so, and send them to the League headquarters.

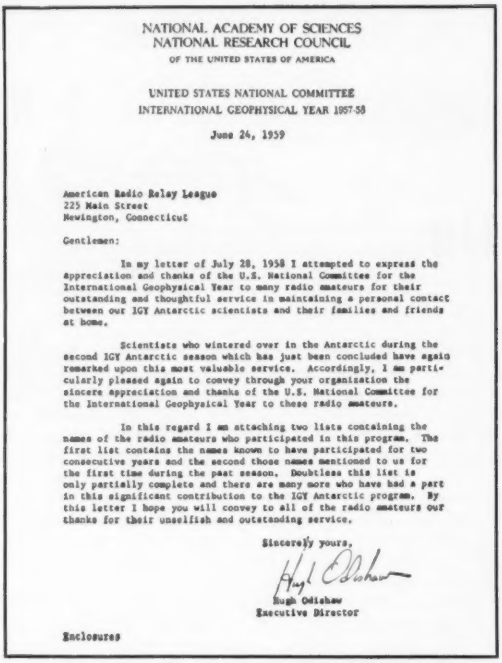
At headquarters, the QSL cards are sorted out approximately every ten days and mailed to the volunteer District QSL Managers. Now this is where *you* have to do something — you furnish your own district QSL manager (see page 174 for the names and addresses) with stamped, self-addressed envelopes, 9½ by 4 inches. The size of the envelope is important to most of the district bureaus, because their racks or cubby-holes are built especially for the business-size envelope. Stationery stores generally call this size a "number 10" while the post office calls its pre-stamped version a "number 8." You may, if you wish, give the district manager additional simple instructions, such as "Mail when full" or "Mail monthly." In the former case, if you have a four-cent stamp on the envelope, he will mail it when six cards have accumulated; if eight cents postage is attached, he'll wait for 12 cards, etc.

There is an alternative plan in operation at some bureaus which you may use if the manager agrees and you wish to use it: under this system, you may send a dollar to the manager, who agrees to buy, stamp, address and mail a stated number of envelopes to you, notifying you when to remit another buck. This optional plan is of course a little more expensive because you are in effect hiring the manager to do your work for you. Many hams and managers have found it mutually convenient, and the headquarters does not object to this method as an optional one. However, the user of the bureau may always use the original system of sending stamped-self-addressed envelopes to the manager in order to receive his cards.

Bear in mind that the bureau cannot be anywhere near as fast as direct mail. A great many foreign amateurs send their cards through an outgoing bureau operated by their own amateur society. There is a delay perhaps at the amateur's station, until he has enough outgoing cards to send to his bureau; another delay at his bureau until its manager is ready to mail to ARRL (or in some cases direct to your district bureau). Some countries will accept QSLs at "business papers" or "printed matter" rates, and when this is done, the bundles come by slow mail. The cards are usually sorted and mailed at headquarters every ten days or so — another slight delay. If you're really anxious to receive a particular card, you should ask the amateur you've worked to QSL by direct mail — and enclose IRCs or unused stamps of the country concerned to pay for the extra service. (Naturally, a U. S. or Canadian stamp is of little value overseas.)

Another important point — the League attempts to operate only an incoming QSL service. Your outgoing cards can be mailed to the bureaus listed in the "IARU News" column of *QST* each June and December, and in the *Radio Amateur Call Book*, or direct to the address listed in the *Call Book* for your contact.

One final point — the District QSL Managers are all volunteers, who are giving up a part of their operating time to serve you. They receive no salary or fees — and few compliments! They are one of the hardest-working, most dedicated group of volunteers you will find anywhere. Your patience and active cooperation are essential to keep the system moving smoothly.



NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL
OF THE UNITED STATES OF AMERICA

UNITED STATES NATIONAL COMMITTEE
INTERNATIONAL GEOPHYSICAL YEAR 1957-58

June 24, 1959

American Radio Relay League
225 Main Street
Newington, Connecticut

Gentlemen:

In my letter of July 28, 1958 I attempted to express the appreciation and thanks of the U.S. National Committee for the International Geophysical Year to many radio amateurs for their outstanding and thoughtful service in maintaining a personal contact between our IGY Antarctic scientists and their families and friends at home.

Scientists who wintered over in the Antarctic during the second IGY Antarctic season which has just been concluded have again remarked upon this most valuable service. Accordingly, I am particularly pleased again to convey through your organization the sincere appreciation and thanks of the U.S. National Committee for the International Geophysical Year to these radio amateurs.

In this regard I am attaching two lists containing the names of the radio amateurs who participated in this program. The first list contains the names known to have participated for two consecutive years and the second those names mentioned to us for the first time during the past season. Doubtless this list is only partially complete and there are many more who have had a part in this significant contribution to the IGY Antarctic program. By this letter I hope you will convey to all of the radio amateurs our thanks for their unselfish and outstanding service.

Sincerely yours,

Hugh Odishaw
Executive Director

Enclosures

The following amateurs have received letters of thanks (similar to the one at the left) from Hugh Odishaw, executive director of the U. S. National Committee for the International Geophysical Year, for these hams' service in handling messages between IGY scientists in the Antarctic and their families and friends at home for two years.

W4ECI	K2KGJ
W2KCR	W3UKF
W9RUK	K4KCV
W6QPI	WØIWR
W2VH	WØCO
W9ETM	K5JLQ
W4VQE	

These amateurs received letters of thanks for maintaining personal contact between IGY scientists and home during one year. Odishaw said that his list was probably only partially complete and that he wanted to thank all amateurs who helped IGY scientists at any time.

W5SVP	K2KGH
W9GPI	W1KIB
K2DUY	K5EJC
W7ROD	K6MZT
W1BKG	W4PQO
W7ULK	W8LIO
K1AYE	W2ABV
W8JYJ	W5SH
W8GDB	W7GPJ
W1MJD	K6ALL
W8OUH	W1KSK
K1NAP	

Strays

A new name on the amateur radio horizon is *The Yasme Foundation*, a non-profit organization dedicated, according to its charter, to "the advancement of amateur radio as an educational and scientific medium, the promotion of international goodwill . . ." It will also "organize and conduct world-wide and international expeditions." President of the Foundation is KV4AA, vice president is W4QDZ, and secretary is W8EWS. Directors include W6GN, W9AC, W4TO, K4KCV, and VP2VB. Danny Weil, VP2VB, is negotiating for the purchase of another boat, and a slick-paper monthly publication, *The Yasme News* has been initiated. Editor and business manager is W4QDZ.

—···—

We're at a loss for words — one of our correspondents inquires as to the front-to-back ratio of a Windom antenna.

—···—

W4AWY has prepared a paper entitled "How to Increase the Accuracy of Your Frequency Meter Readings", describing a highly accurate heterodyne method of frequency measurement for use with the BC-221 and LM series frequency meters. A limited number of copies are available. If you own one of the meters and want a copy, send a business-size (about 4½ by 9 inches) self-addressed stamped (4¢) envelope along with your request to Kenneth N. Sapp, 102 Savannah Highway, Charleston, S. C.

"I believe I have the distinction of giving the only RST 189 report to a DX station. I worked UC2AR on 20-meter c.w. under the following conditions: In the room in which I was operating the air conditioner was on, draining my input power from the normal 75 watts down to 25 watts; the TV set was on, throwing spurious signals into my receiver and QRN from the sound; my XYL was having an argument with me; and our 3-year-old harmonic was crying. In addition, there were two local stations on the same frequency calling CQ!" — *W3INH*

Kansas — The Wichita Amatuer Radio Club and the Air Capital Amateur Radio Association are sponsoring the first annual convention of the Federation of Kansas Amateur Radio Clubs on Nov. 21 at the Broadview Hotel, Wichita. Activities will include a banquet, technical talks, and a dance. There will also be equipment displays and ladies' activities. Pre-registration (prior to Nov. 14) is $5.00, or $6.00 at the door. For further information and registrations, contact the convention chairman, c/o Amateur Radio Equipment Co., 1203 E. Douglas, Wichita.

Michigan — The fifth annual v.h.f. conference will be held at Western Michigan University, Kalamazoo, on Saturday, Nov. 21. A program of talks and demonstrations of interest to the "50 Mc. and Above" group is being arranged for the afternoon session. Meetings for local net members, including MARS, are planned. An evening banquet will be followed by an address on Space Travel. Contact W8CVQ for further details.

"A Do-It-Yourself" Guide to Design and Construction of

Log Periodic Antennas

BY CARL T. MILNER,* W1FVY

A new look in antenna structures results from the application of the log periodic concept in antenna design.

This new family of antennas exhibits pattern and impedance characteristics which are essentially frequency independent over extremely wide bandwidths. Ten-to-one bandwidths are readily attained in practice. Various configurations can provide vertical or horizontal linear polarization as well as circular polarization. Radiation patterns can be made uni-, bi-, or omnidirectional with relative ease. This paper shows how to design practical antennas for amateur use at low cost and includes several practical sets of working construction dimensions.

On reading over several articles by R. H. DuHamel [1] disclosing a completely new concept in wide-frequency-range antennas, designing and building one appeared to be a fine project for the "do-it-yourselfer."

The performance of this new antenna structure has now been well established, and sufficient design information has been published to permit one to design a structure for amateur use. The non-frequency-sensitive aspect — the antenna can operate over more than a 10-to-1 frequency range — is the most valuable feature to us amateurs. It is possible, for example, that one antenna could be designed and built to operate over the *entire* frequency range from 3.5 through 30 Mc. using only one feed line, with uniform gain and beam pattern for *any* frequency within these limits. The v.s.w.r. would average about 1.5:1, with a maximum of 2:1. The available gain will, of course, vary with the beam pattern desired but will run from 5 to more than 10 db. over a dipole. For instance, if a vertical coverage of 90 degrees and azimuth coverage of about 65 degrees is acceptable, a gain of about 6 db. can be attained (cutoff points are assumed to be at half-power levels). The impedance will be within the range 50 to 200 ohms.

All is not gold that glitters, however, and a word of caution must be given that it is essential that a harmonic-rejecting coupler be used between the transmitter and this antenna. The antenna is ready and willing to accept harmonics and other spurious emissions and to radiate them with the same 6-db. gain as the fundamental. Lids, beware! You should use a coupler with any antenna in any case.

A view of a scale model log periodic antenna is shown in Fig. 1, and the dimensions entering into the design are shown in Fig. 2.

Now let's see what will be required to design and construct such an antenna.

Finding Dimensions

As a point of departure; first let's decide on the lowest frequency on which we desire to operate. For instance, we may choose 14 Mc. and want to operate up through 144 Mc. In this type of antenna the longest element, E_1, is about 0.5 wavelength at lowest frequency selected. For 14 Mc. we will use a figure of about 35 feet. On the logical basis that what is good enough for the experienced designer should be good enough for us, we will use the published design factors used by DuHamel for his Collins Model 237A series.

* 221 Shennecossett Parkway, Groton, Conn.

[1] *Space Aeronautics Magazine*, March, 1959, p. 148. 1958 *IRE Convention Record*, Part 1, p. 139. 1958 *IRE WESCON Convention Record*, Part 1. 1957 *IRE Convention Record*, Part 1, p. 119.

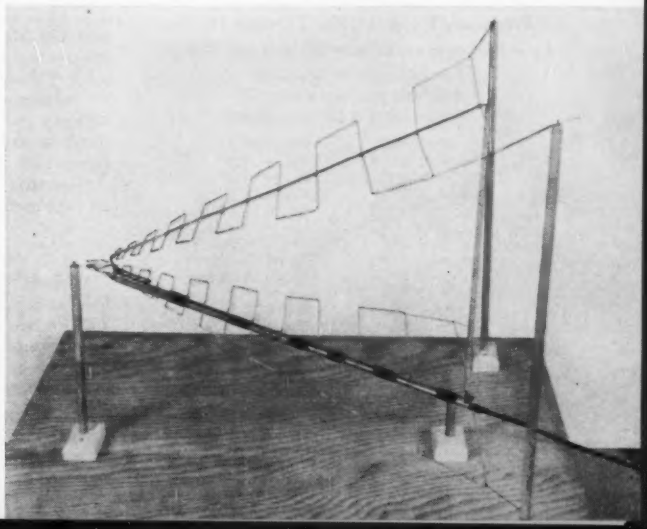


Fig. 1—A u.h.f. model of the log periodic antenna built for pattern measurements. This shows the element configuration that is characteristic of all antennas of this type. This model covers the frequency range from 450 to 5000 Mc.

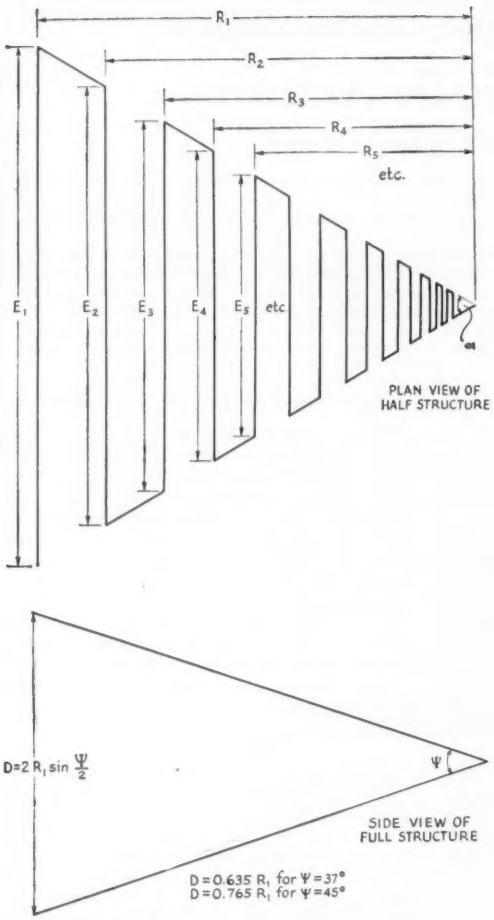


Fig. 2—Design dimensions of the log periodic antenna.

He picked an apex angle, a, of 60 degrees in the horizontal plane for each half of the antenna. A vertical angle, ψ, of 37 degrees between the two half structures was chosen to provide a 90-degree vertical pattern. A periodic function τ of 0.6 was arbitrarily selected. The gain for this design is about 6 db. over a dipole and an azimuth beam pattern of about 65 degrees is obtained.

The second step is to determine the distance R_1 from the apex (feed point) to the center of the longest element. From our high school geometry we can determine that this is about 30.3 feet, using the equations for right triangles, since we know all the angles and the length of one triangle side is half the chosen longest element's length. The equation I used was

$$R_1 = \frac{E_1}{2} \cot \frac{\alpha}{2},$$

which, since $\alpha = 60^0$, is $0.866E_1$ or 30.3 feet.

Next we obtain the position of the third element by multiplying this R_1 by the τ of 0.6 and get 18.2 feet for R_3. Now what about the second element? From DuHamel's equations this will be $R_2 = R_1\sqrt{\tau}$, so when $\tau = 0.6$, $R_2 = 0.775R_1$. As you can see, this is actually the geometric mean between R_1 and R_3. Multiplying this out we get 23.5 feet for the second-element spacing. The rest is easy, for we need only multiply by τ to get the values $R_4 = 0.6R_2$, $R_5 = 0.6R_3$, and so on. The identical procedure will yield the element lengths since they have the same periodic relationship.

The tables show values for construction of various practical antennas. Tables I and II are for 20 meters and up, Table III is for 10 meters and up, and Table IV is a v.h.f. man's dream. It covers continuously from 50 Mc. through the TV, f.m., aircraft and satellite bands, 144, 220 and 450 Mc., all in one structure having 6-db. gain — and which is only about the size of a good v.h.f. TV antenna.

One important point to remember is that this antenna radiates forward from the longest element toward the feed point, unlike a conical or horn which it somewhat resembles in appearance.

Now that we have determined the dimensions, all that remains is to construct the working unit.

TABLE I

Frequency Range 14 Mc. Through 144 Mc.
$E_1 = 35$ feet $\alpha = 60°$ $\psi = 37°$ $\tau = 0.6$ D = 19'3"
Vertical pattern about 90°
Azimuth pattern about 65°
Gain about 6 db. over dipole

E_1	= 35' 0"	R_1	= 30' 4"
E_2	= 27' 2"	R_2	= 23' 6"
E_3	= 21' 0"	R_3	= 18' 2"
E_4	= 16' 3"	R_4	= 14' 1"
E_5	= 12' 8"	R_5	= 10' 11"
E_6	= 9' 9"	R_6	= 8' 6"
E_7	= 7' 7"	R_7	= 6' 6"
E_8	= 5' 10"	R_8	= 5' 1"
E_9	= 4' 7"	R_9	= 3' 11"
E_{10}	= 3' 6"	R_{10}	= 3' 0"
E_{11}	= 2' 9"	R_{11}	= 2' 4"
E_{12}	= 2' 2"	R_{12}	= 1' 10"
E_{13}	= 1' 8"	R_{13}	= 1' 5"
E_{14}	= 1' 3"	R_{14}	= 1' 1"
E_{15}	= 1' 0"	R_{15}	= 0' 10"
E_{16}	= 0' 9"	R_{16}	= 0' 8"

Building One

While it is possible to build the 14-Mc.- and-up unit as a rotary beam, as Collins does in their 237A series, it will be much simpler and less expensive to build a fixed array in the following manner:

Determine desired beam direction and put up

a 15-foot vertical length of TV mast to support the apex or feed point. Next, set up two 30-foot TV-type telescopic masts (about $7.50 each, locally) to support the ends of the rear longest elements. Their spacing will be about 40 feet or so on a horizontal line perpendicular to the end of a radius R_1 drawn from the apex in the direction opposite to the desired main lobe's bearing. Roughly, the three masts will form an equilateral triangle with the 15-footer at the apex located in the desired direction of radiation. The 65-degree-wide main lobe should provide a satisfactory coverage area.

Now, by using stranded or, preferably, copper-weld antenna wire for elements and a quantity of polyethylene line for support, it should be easy to arrange the necessary radiating elements as determined by our calculated dimensions. The angle between the upper half-structure and the lower one will be about 37 degrees if we follow Collins' example, giving a separation of 19.2 feet between the open ends of the two halves of the antenna. The lower element should be arranged to be high enough off the ground so it will not be a hazard to persons.

A wire or boom should be used to connect all the centers of the elements of each half together. As this is a nodal balance point, it can be grounded for lightning protection. The best method of feeding may be to use a piece of tubing for the lower-half center bonding element and use it as a sleeve through which a coax line (RG-59/U or RG-11/U) can be passed. This will make it unnecessary to use any other type of line-balancing device. This feed coax will go from the rear to the apex feed point, where the coax shield will connect to the end of the shortest element of the lower half-structure and the center conductor will connect to the end of the shortest element of the top half-structure. Note that the upper and lower structures are opposite symmetrical structures and are not mirror images. This entire antenna should not cost over $35.00 to construct, exclusive of the feed line.

An Experimental V.H.F. Model

An antenna using the dimensions of Table IV was constructed for the purpose of getting some performance data on the system. At the time, the only available material was some brass tubing, and the resulting structure was much too heavy for one-man installation on a regular

TABLE II

Frequency Range 14 Mc. Through 144 Mc.

$E_1 = 35$ feet $\alpha = 45°$ $\psi = 45°$ $D = 32'\ 5''$

τ either 0.6 or 0.707

Vertical pattern about 66°

Azimuth pattern about 66°

Gain about 7.7 db. over dipole

Dimensions when τ = 0.6				Dimensions when τ = 0.707			
E_1	= 35′ 0″	R_1	= 42′ 3″	E_1	= 35′ 0″	R_1	= 42′ 3″
E_2	= 27′ 2″	R_2	= 32′ 9″	E_2	= 29′ 5″	R_2	= 35′ 6″
E_3	= 21′ 0″	R_3	= 25′ 4″	E_3	= 24′ 9″	R_3	= 29′ 10″
E_4	= 16′ 3″	R_4	= 19′ 8″	E_4	= 20′ 9″	R_4	= 25′ 2″
E_5	= 12′ 8″	R_5	= 15′ 3″	E_5	= 17′ 6″	R_5	= 21′ 2″
E_6	= 9′ 9″	R_6	= 11′ 9″	E_6	= 14′ 9″	R_6	= 17′ 9″
E_7	= 7′ 7″	R_7	= 9′ 2″	E_7	= 12′ 4″	R_7	= 15′ 0″
E_8	= 5′ 10″	R_8	= 7′ 1″	E_8	= 10′ 5″	R_8	= 12′ 7″
E_9	= 4′ 6″	R_9	= 5′ 6″	E_9	= 8′ 9″	R_9	= 10′ 7″
E_{10}	= 3′ 6″	R_{10}	= 4′ 3″	E_{10}	= 7′ 4″	R_{10}	= 8′ 10″
E_{11}	= 2′ 9″	R_{11}	= 3′ 4″	E_{11}	= 6′ 2″	R_{11}	= 7′ 6″
E_{12}	= 2′ 2″	$R_{12} \times$	2′ 6″	E_{12}	= 5′ 2″	R_{12}	= 6′ 3″
E_{13}	= 1′ 8″	R_{13}	= 2′ 0″	E_{13}	= 4′ 4″	R_{13}	= 5′ 4″
E_{14}	= 1′ 3″	R_{14}	= 1′ 6″	E_{14}	= 3′ 8″	R_{14}	= 4′ 5″
E_{15}	= 1′ 0″	R_{15}	= 1′ 2″	E_{15}	= 3′ 1″	R_{15}	= 3′ 9″
E_{16}	= 0′ 9″	R_{16}	= 0′ 11″	E_{16}	= 2′ 7″	R_{16}	= 3′ 2″
				E_{17}	= 2′ 2″	R_{17}	= 2′ 8″
				E_{18}	= 1′ 10″	R_{18}	= 2′ 3″
				E_{19}	= 1′ 6″	R_{19}	= 1′ 10″
				E_{20}	= 1′ 3″	R_{20}	= 1′ 7″
				E_{21}	= 1′ 1″	R_{21}	= 1′ 4″
				E_{22}	= 0′ 11″	R_{22}	= 1′ 2″
				E_{23}	= 0′ 9″	R_{23}	= 0′ 11″

TABLE III

Frequency Range 28 Mc. Through 280 Mc.

$E_1 = 17.7$ feet $\alpha = 60°$ $\psi = 37°$ $\tau = 0.6$ $D = 9'\ 9''$

Vertical pattern about 90°

Azimuth pattern about 65°

Gain about 6 db. over dipole

E_1	= 17′ 9″	R_1	= 15′ 4″
E_2	= 13′ 9″	R_2	= 11′ 11″
E_3	= 10′ 8″	R_3	= 9′ 3″
E_4	= 8′ 3″	R_4	= 7′ 2″
E_5	= 6′ 4″	R_5	= 5′ 6″
E_6	= 4′ 11″	R_6	= 4′ 3″
E_7	= 3′ 10″	R_7	= 3′ 4″
E_8	= 3′ 0″	R_8	= 2′ 7″
E_9	= 2′ 4″	R_9	= 2′ 0″
E_{10}	= 1′ 9″	R_{10}	= 1′ 6″
E_{11}	= 1′ 5″	R_{11}	= 1′ 2″
E_{12}	= 1′ 1″	R_{12}	= 0′ 11″
E_{13}	= 0′ 10″	R_{12}	= 0′ 9″

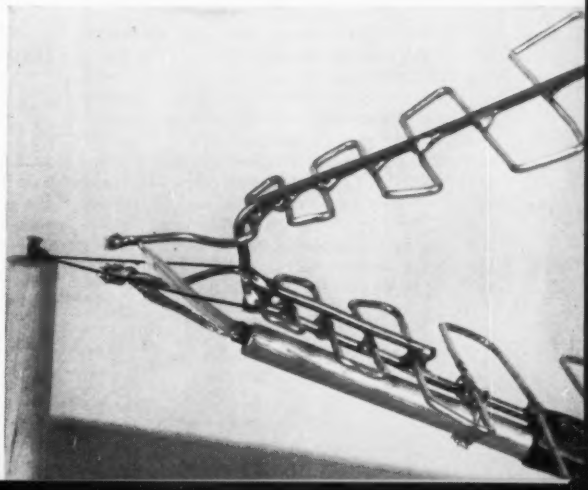


Fig. 3—Feed arrangement using coaxial cable. There is a voltage node at the center of each element, so a metallic support may be bonded to the centers without disturbing the operation of the antenna. The coax is run through a sleeve fastened to the support for the lower half-structure, thereby decoupling the coax shield from the antenna.

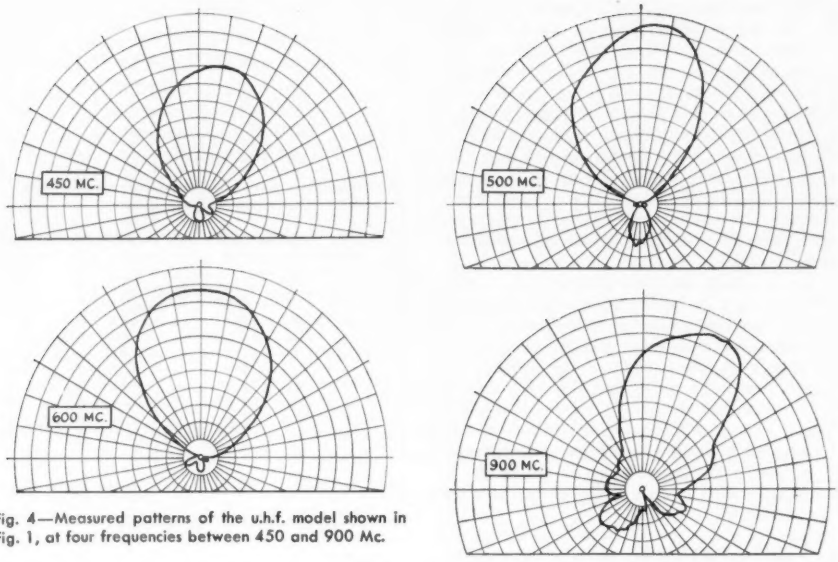


Fig. 4—Measured patterns of the u.h.f. model shown in Fig. 1, at four frequencies between 450 and 900 Mc.

tower, so the tests were made at a height of about 12 feet. Using RG-59/U line to feed the antenna, s.w.r. measurements yielded the following data:

Frequency	*S.W.R. in 75-Ohm Line*
50.04 Mc.	1.4 to 1
50.4 "	1.45 to 1
51.25 "	1.5 to 1
144.12 "	1.05 to 1
144.72 "	1.5 to 1
144.9 "	1.7 to 1
145.35 "	2.1 to 1
145.8 "	1.9 to 1
146.25 "	1.6 to 1
146.7 "	1.1 to 1
147.12 "	1.2 to 1
147.6 "	1.5 to 1

Similar checks were made with 52-ohm RG-58/U feed line, and comparison of the standing-wave ratios with those observed for RG-59/U indicated that the impedance of the antenna is actually greater than 75 ohms. The feed line I would recommend is 95-ohm RG-62/U, which has much lower loss than either RG-58/U or RG-59/U but costs only about $6 per hundred feet. RG-63/U (125 ohms) might provide even a better match, but costs about twice as much.

Although the experimental antenna was tried only at the 12-foot height, it provided a number of 6- and 2-meter contacts with various points in Connecticut, using Communicators. On TV reception it gave excellent performance as compared with a Channel-Master Super-Rainbow which was at a height of 45 feet, and on the f.m. band it out-performed the TV antenna despite the difference in height. A similar antenna, using lighter construction so the weight will be manageable, is planned for the near future.

Other Configurations

All this is fine, you say, but these gain figures are a bit low compared with what is claimed for some one-band arrays, so how can we "hot rod" it to get higher gain? First, it is not practical to stack antennas because stacking will introduce a frequency-dependent factor. There are several methods for getting moderate improvements at the expense of beam coverage or increasing the number and size of elements.

One method which will provide up to 10.5 db. gain is to decrease the apex angle, α, and increase the periodic function, τ. An angle of 45 degrees with a τ of 0.707 and a separation angle of 45 degrees will give us 7.7 db. gain with little change in azimuth pattern and an acceptable decrease of vertical coverage to 66 degrees. The length from apex to rear element grows from about 30 feet to about 42 feet (Table II) and the total

TABLE IV

Frequency Range 49 Mc. Through 490 Mc.
$E_1 = 10$ feet $\alpha = 60°$ $\psi = 37°$ $\tau = 0.707$ D = 5′ 6″
Vertical pattern about 90°
Azimuth pattern about 65°
Gain about 6 db. over dipole

E_1	= 10′ 0″	R_1	= 8′ 8″
E_2	= 8′ 5″	R_2	= 7′ 3″
E_3	= 7′ 1″	R_3	= 6′ 2″
E_4	= 6′ 0″	R_4	= 5′ 2″
E_5	= 5′ 0″	R_5	= 4′ 4″
E_6	= 4′ 3″	R_6	= 3′ 8″
E_7	= 3′ 6″	R_7	= 3′ 1″
E_8	= 3′ 0″	R_8	= 2′ 7″
E_9	= 2′ 6″	R_9	= 2′ 2″
E_{10}	= 2′ 2″	R_{10}	= 1′ 10″
E_{11}	= 1′ 9″	R_{11}	= 1′ 6″
E_{12}	= 1′ 6″	R_{12}	= 1′ 3″
E_{13}	= 1′ 3″	R_{13}	= 1′ 1″
E_{14}	= 1′ 0″	R_{14}	= 0′ 11″
E_{15}	= 0′ 10″	R_{15}	= 0′ 9″
E_{16}	= 0′ 9″	R_{16}	= 0′ 8″
E_{17}	= 0′ 8″	R_{17}	= 0′ 6″

(*Continued on page 140*)

A phasing-type s.s.b. exciter. All adjustments can be made from the 7-inch rack panel. Controls along the top, from left to right, are for antenna coupling, the multiband tuner in the final, and the v.f.o. Along the bottom are connectors for microphone input and test-tone input (for alignment purposes), audio gain control, carrier null controls, sideband selector, band switch, excitation and final grid-tuning controls, mode switch and key jack. *(Photos by Rogers H. Connell, WFLA-TV News-Photo.)*

By taking advantage of readily-available surplus units, this s.s.b. exciter can be built for less than $150. It contains all of the conveniences and features found in most advanced units.

Package Unit Covering 10 Through 80 Meters

BY ADELBERT KELLEY,* K4EEU

A Phasing-Type Sideband

SHORTLY after being bitten by the sideband bug, the author constructed the popular W2EWL exciter [1] in the single-band version. Several months later the excellent design by W6TEU [2] appeared, featuring all h.f. bands and voice control— in short, all the desirable features in one package. The project was immediately undertaken to rebuild the W2EWL exciter along the general outlines of the "Sideband Package," but as a phasing exciter rather than a filter rig.

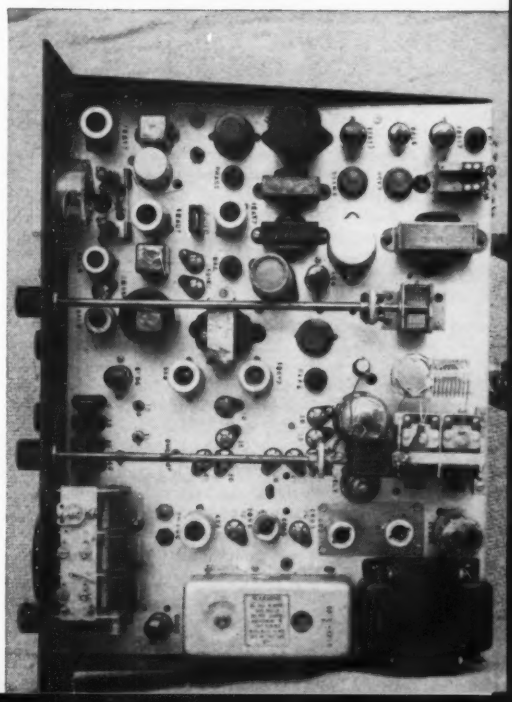
This design differs from the "Package" in the following ways:

1) Sideband generation by the phasing method.

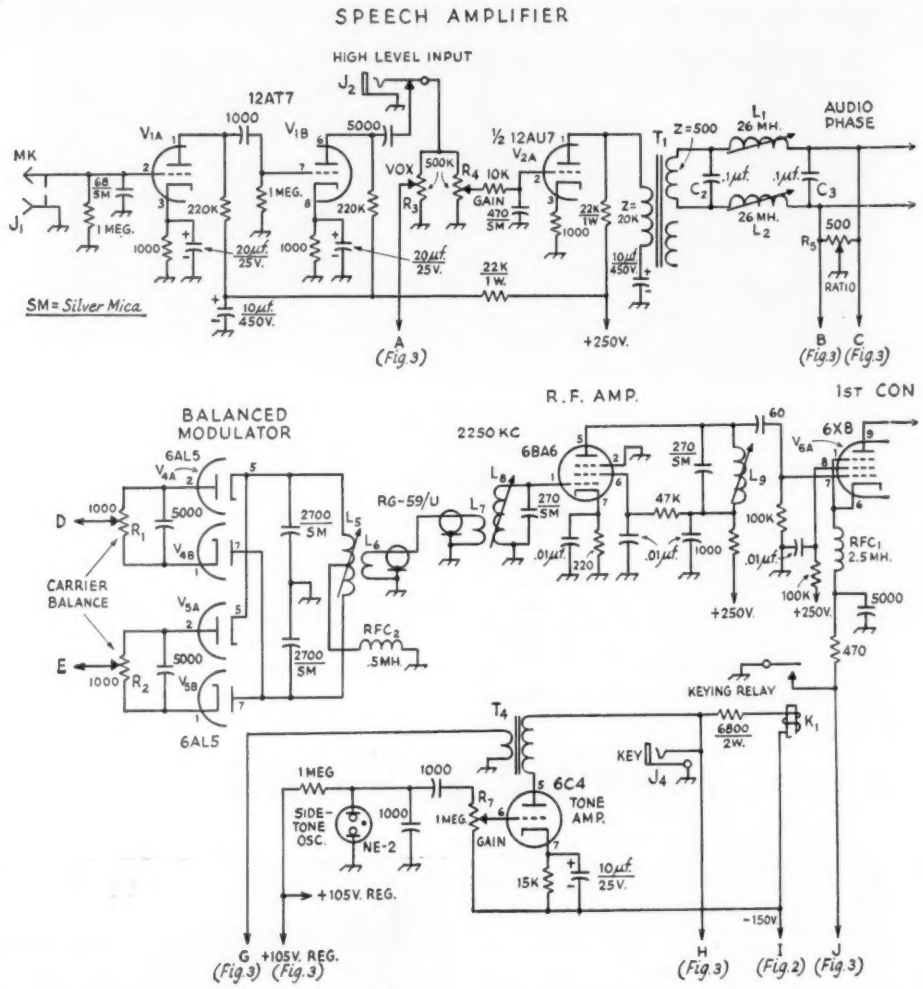
* 2307 South Clark Ave., Tampa 9, Florida.

[1] Vitale, "Cheap and Easy S.S.B.," *QST*, March, 1956. Also A.R.R.L. *Single Sideband for the Radio Amateur*, second edition.

[2] Bigler, "A Sideband Package," *QST*, June, 1958.



K4EEU's s.s.b. exciter is assembled on a 17 × 13 × 3-inch chassis. On the portion toward the panel, the audio section is at the top, converter section for higher-frequency bands at the center, and the v.f.o. at the bottom. Along the rear, from top to bottom are the high-voltage filter choke, antenna-tuning capacitor, the final r.f. stage with its multiband tuner and the power transformer.



2) More elaborate voice-control system, to include receiver control.

3) Use of the voice-control system on c.w., to provide break-in.

4) Provision for side tone on c.w.

5) Modification of the power supply to increase the power output.

6) Use of additional surplus material to lower the cost.

If all parts and surplus items are purchased as needed especially for this transmitter, the cost will be less than $150. A moderately well-stocked spare-parts supply will reduce this figure considerably and, if care is taken in construction, the builder will be rewarded with a transmitter equal in most respects to commercial exciters costing several times as much.

A project such as this is not for the Novice, but the ham with experience in building transmitters and superhet receivers should be well qualified. As a first step, it is suggested that the prospective builder thoroughly read and understand the two articles referred to and then acquire all parts necessary.

Circuit Discussion

The sideband signal is generated at 2250 kc. with the circuit used in "S.S.B. Jr." [3] and the W2EWL rig, and amplified to a level of about 2 volts by a 6BA6. It is then heterodyned with a v.f.o. signal operating from 5250 to 6250 kc. The resulting 3- to 4-Mc. heterodyne is selected by tuned band-pass coils and further amplified by linear amplifiers for straight-through operation on 80 meters. For other bands the 80-meter signal is again converted by crystal oscillators to

[3] "S.S.B. Jr.," *G.E. Ham News*, Nov.-Dec., 1950 (Vol. 5, No. 6).

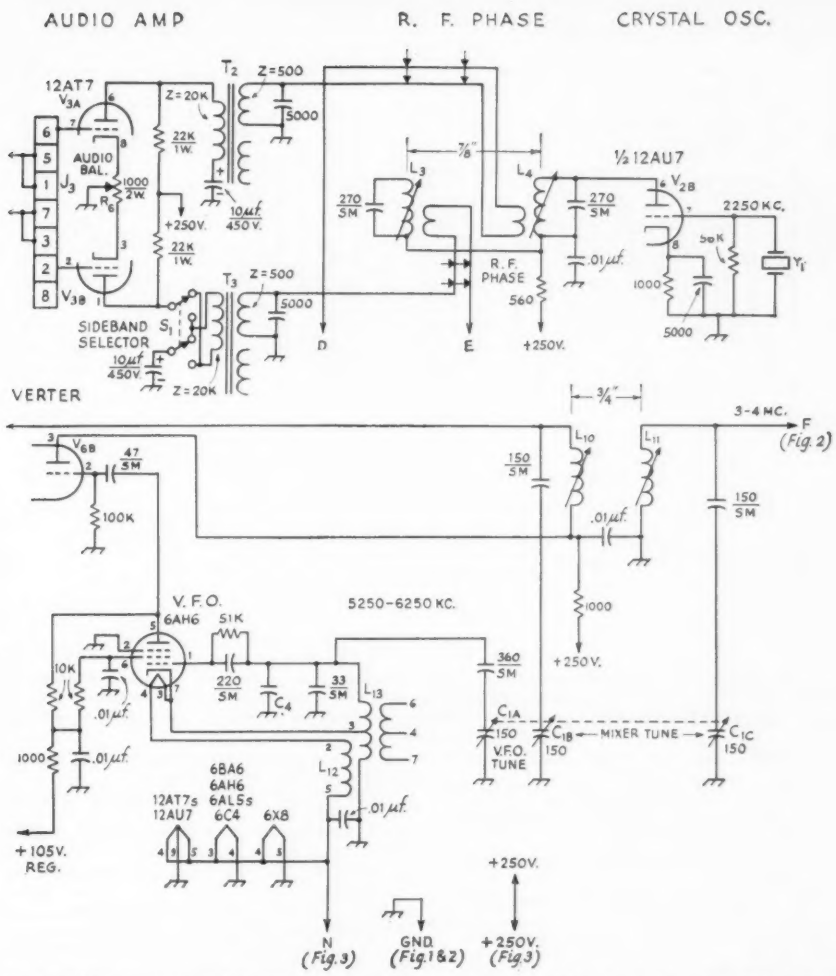


Fig. 1—Sideband-generator, 4-Mc.-output, and c.w.-keying sections of the 30-watt s.s.b. transmitter. Unless otherwise marked, capacitances are in µµf. Capacitors with polarity markings are electrolytic. Other fixed capacitors not marked SM may be mica or ceramic. Resistances are in ohms and resistors are ½ watt unless indicated otherwise.

C_1—Three-gang capacitor from R-26/ARC-5, 3-6-Mc. surplus receiver.
C_2, C_3—Disk ceramic (Centralab DDA104).
C_4—Fixed air padder in BC-458.
J_1—Microphone connector.
J_2—Closed-circuit jack.
J_3—Octal tube socket (for B & W 350 plug-in phase-shift network).
J_4—Open-circuit jack.
K_1—2500-ohm relay, s.p.s.t. contacts (Potter & Brumfield LB-5).
L_1, L_2—TV-width coil, adjusted to 26 mh. (Thordarson WC-19).
L_3,* L_4,* L_8,* L_9*—45 turns No. 28 enam., adjusted to resonate at 2250 kc. (2-turn links on L_3, L_4. Arrows indicate twisted pair).
L_5*—16 turns No. 22 enam. double-spaced, c. t., adjusted to resonate at 2250 kc.
L_6—2 turns over center of L_5.
L_7—6 turns at ground end of L_8.
L_{10}, L_{11}—40 turns No. 34 enam., close-wound on ½-inch diam. iron-slug form (National XR-50 form).
L_{12}, L_{13}—Oscillator coil unit from BC-458.
R_1, R_2, R_5, R_6—Linear-taper potentiometer.
R_3, R_4, R_7—Audio-taper potentiometer.
RFC_1—2.5-mh. r.f. choke (National R-100S or equivalent).
RFC_2—0.5-mh. r.f. choke (National R-50).
S_1—D.p.d.t. rotary switch (Centralab 1462).
T_1, T_2, T_3—Miniature 20,000-to-500-ohm transformer (surplus or see *QST* Ham-Ads).
T_4—5-watt tube-to-voice coil (3.2 ohms) output transformer (Thordarson 24S50 or equivalent).
Y_1—2250-kc. crystal.

* Wound on 5/16-inch diam. iron-slug form from surplus unit. If 3/8-inch forms are used, turns should be decreased by about 25 per cent. If 1/4-inch forms are used, turns should be increased by about 25 per cent. Half-inch forms will require a reduction of about 50 per cent in the number of turns.

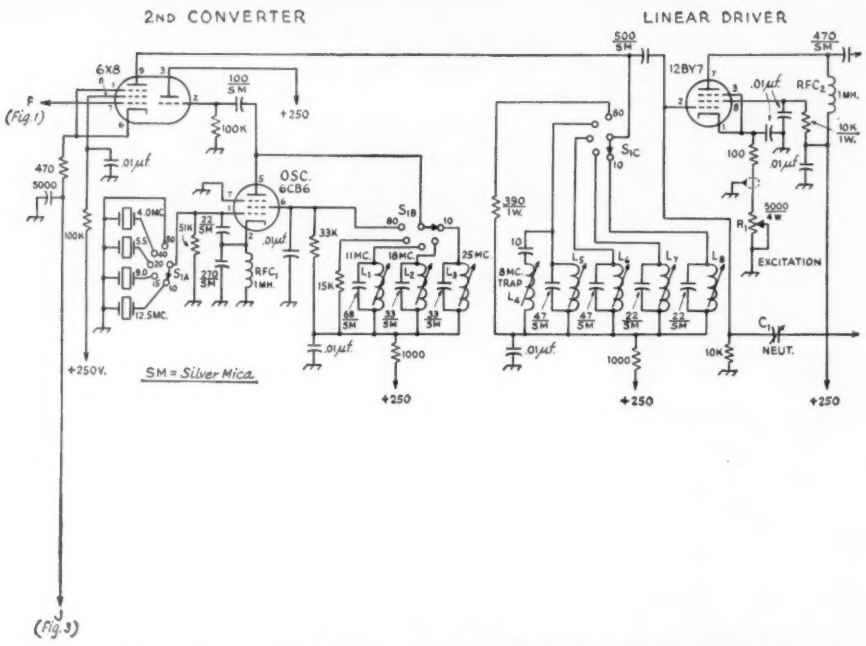


Fig. 2—Second-converter, driver and final-amplifier circuits of K4EEU's s.s.b. exciter. Unless otherwise indicated, capacitances are in $\mu\mu$f. Fixed capacitors marked SM should be silver mica or NP0 ceramic; those with polarity markings are electrolytic. Other fixed capacitors are disk ceramic. Resistors are ½ watt unless indicated otherwise, and resistances are in ohms.

C_1—Neutralizing capacitor—insulated wires twisted together to form capacitor.
C_2—30-$\mu\mu$f. variable, midget receiving type.
C_3—Neutralizing capacitor, 0.5 to 5 $\mu\mu$f. (Millen 15001, Bud NC-1929 or similar).
C_4—Dual 150-$\mu\mu$f. variable capacitor (Bud CE-2046 or surplus).
C_5—365-$\mu\mu$f. variable, broadcast-replacement type).
CR_1—50-ma. selenium rectifier.
J_1—Chassis-mounting coax receptacle (SO-239).

L_1—15 turns No. 22.
L_2—13 turns No. 22.
L_3—10 turns No. 22.
L_4—100 turns No. 34.
L_5—30 turns No. 26.
L_6—20 turns No. 22.
L_7—10 turns No. 22.
L_8—7 turns No. 22.
L_9—90 turns No. 34.
L_{10}—20 turns No. 26.
L_{11}—20 turns No. 22.
L_{12}—9 turns No. 22.
L_{13}—4 turns No. 22.

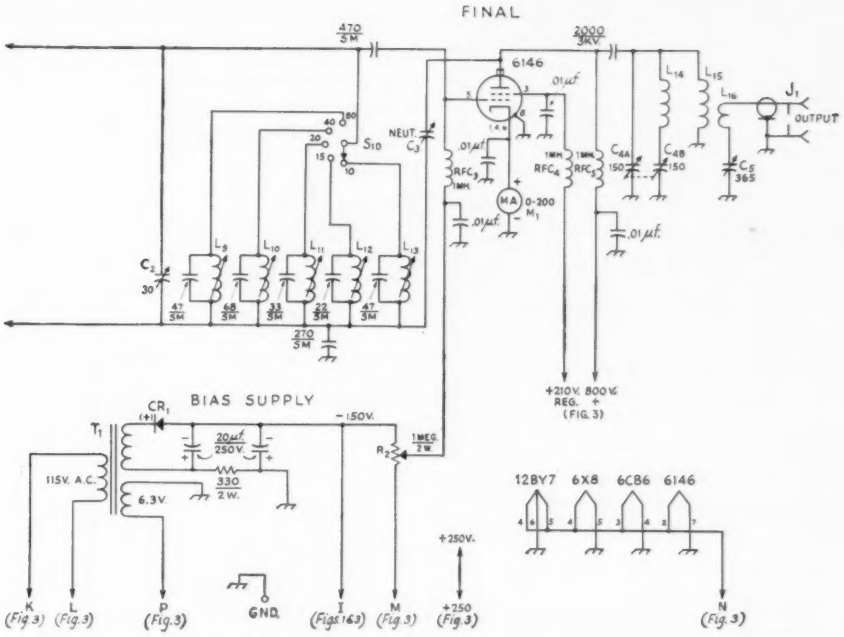
Note: In reference to the above coils, slug is adjusted in each case to resonance at the circuit frequency indicated in the diagram. See * in caption Fig. 1.

L_{14}—9 turns No. 18, 1-inch diam., 1⅛ inches long (Air Dux 808T).
L_{15}—21 turns No. 20, 1-inch diam., 1¼ inches long (Air Dux 816T).
L_{16}—8 turns No. 18, 1¼-inch diam., ¾ inch long (Air Dux 1010T).
Note: C_4, L_{14} and L_{15} form a multiband tuner.
M_1—3-inch-square milliammeter.
RFC_1, RFC_2, RFC_3, RFC_4—1-mh. 100-ma. r.f. choke.
RFC_5—1-mh. 300-ma. r.f. choke.
S_1—Band switch made from Centralab Switchkit components as follows: Index assembly—PA-302; S_{1A} and S_{1B} combined on single PA-5 switch section (two of three circuits used); S_{1C}, S_{1D}—each one PA-41 or PA-18 section (all unused contacts connected and shorted out, 5 of 11 positions used).
T_1—Power transformer: 125 volts, 50 ma.; 6.3 volts, 2 amp. (Stancor PA-8421 or similar).

the correct frequencies. Output frequencies of the crystal-controlled oscillator in the second converter are chosen so that the low-frequency end of the first-converter range is used for the higher-frequency bands. As examples, the 4-Mc. output from the 6CB6 in the second converter beats with the 3-to-3.3-Mc. output of the first converter to cover the 7-to-7.3-Mc. range; the second harmonic of the 9-Mc. crystal (18 Mc.) beats with the 3-to-3.45-Mc. portion of the first converter range to produce output from 21 to 21.45 Mc., etc. The high-frequency end of the first-converter range is used only for direct 80-meter output and for the high-frequency end of the 10-meter band.

The V.F.O.

The W2EWL exciter was constructed on a BC-458 chassis. If you have built one of these exciters, you may start by removing all the audio and r.f. circuitry up to the 12A6 mixer, and using these parts in the new transmitter. The BC-458 has an excellent v.f.o. and this, too, is used. The



ceramic coil, fixed air padding capacitor, and the shield are re-used in the new v.f.o. The small green fixed capacitor on the air padder is removed. The old tuning variable is not used, and the triple section tuning capacitor from an R-26/ARC-5 (3–6 Mc.) receiver is substituted. To get the v.f.o. to tune over the correct range it is necessary to insert a 360-$\mu\mu$f. silver mica in series with the oscillator tuning capacitor and shunt 33 $\mu\mu$f. across the coil. No other changes are necessary. The resulting v.f.o. does not have the linear dial of the W6TEU rig but the bandspread is adequate and it is satisfactory in all other respects.

A few construction pointers might be in order. Be sure the v.f.o. shield makes a good all-around contact with the chassis, and provide a ground connection from the frame of the v.f.o. tuning capacitor through a grommeted hole to the under side of the chassis. A small baffle shield was placed over the mode switch to eliminate a small change in frequency when the switch was operated. If carefully constructed, this v.f.o. will compare, in stability, with the best of them.

VOX System

The voice-control system uses a multicontact relay to turn the transmitter on, silence the receiver, provide adjustable time delay, and operate an indicator light. The mode switch controls this circuit and on c.w. provides automatic station control. When the key is pressed both relays close, the receiver goes off, the speaker is switched to side tone, and the transmitter final is activated. Subsequent keying holds the first relay shut until a pause in the transmission causes the VOX relay to open, activating the receiver. While it is not true break-in, this system approaches it. An entire QSO can be had without operating send-receive switches. To aid in operating, a simple neon-tube oscillator provides keying side tone to the station loudspeaker.

When the mode switch is turned to V.F.O., the voice-control system is inactive and there is sufficient signal from the transmitter to zero in on a signal in the receiver. To prevent audio feedback, the audio system is shorted out on c.w. or when setting the v.f.o. When the mode switch is turned to the A.M.-S.S.B. position, regular voice-control operation with anti-trip is available. The anti-trip levels are set by fixed pots on top of the chassis and need not be adjusted in day-to-day operation. The TEST position of the mode switch locks the transmitter on (when terminals on the back terminal board are shorted) for testing or to disable the VOX manually.

Power Supply

The power supply is of the "Economy" type and uses two silicon rectifiers to replace the usual tubes and filament transformers. These rectifiers are real space savers and their price is favorable when compared with the cost of the parts they replace. By using two connections to the bridge system, about 700 volts is available for the 6146 plate and 250 volts for the rest of the chassis without using a large power-wasting resistor. The high-voltage filter capacitors are standard cardboard-sleeve electrolytics and are the answer to a large capacitance in small space.

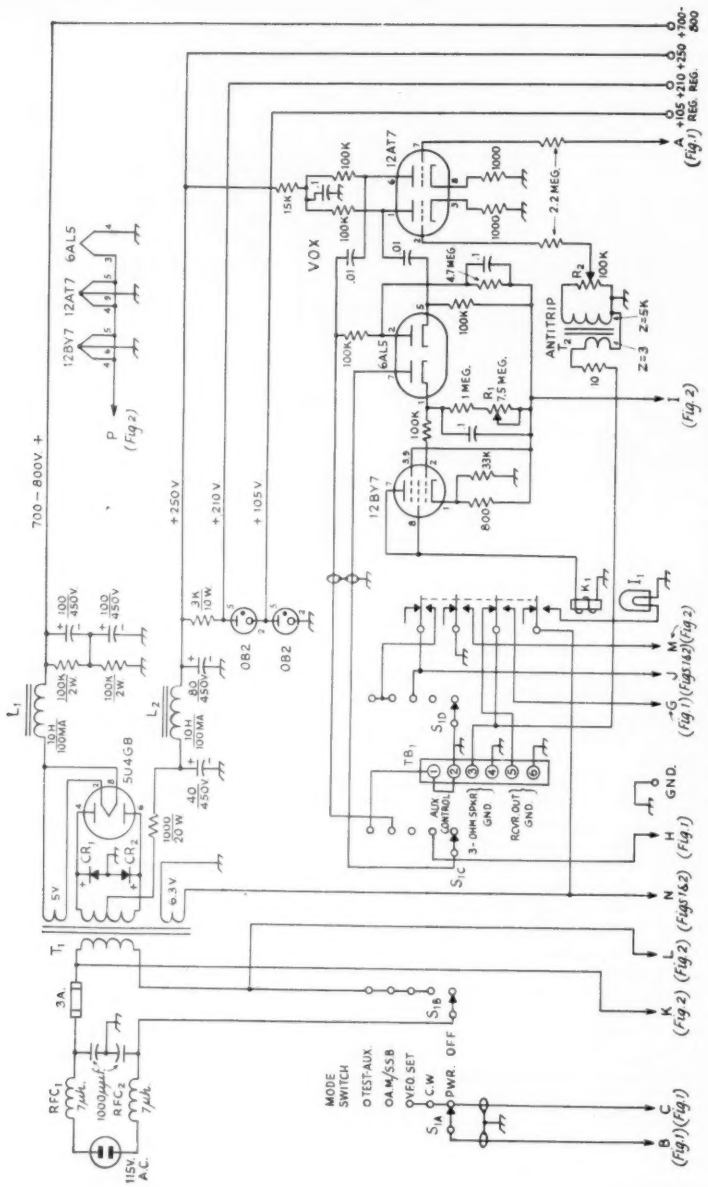


Fig. 3—VOX, power-supply and control circuits of K4EEU's s.s.b. exciter.
Unless otherwise indicated, capacitances are in μf. Capacitors marked with polarity are electrolytic. Other fixed capacitors may be ceramic, paper, or mica.
Resistances are in ohms and resistors ½ watt unless indicated otherwise

CR_1, CR_2—Silicon rectifier, 840 volts r.m.s., 425 ma. (Sarkes Tarzian 120SM).

I_1—6.3-volt dial lamp.

K_1—4 p.d.t. 5000-ohm relay (Potter & Brumfield GPD coil and GP17 contact assembly).

L_1, L_2—10.5-hy. 110-ma. filter choke (Stancor-C1001).

R_1, R_2—Potentiometer, carbon.

S_1—4-pole 5-position rotary switch (Centralab PA-1013 or PA-2011).

T_1—Power transformer: 700 v.c.t., 160 ma.; 5 volts, 3 amp.; 6.3 volts, 5 amp. (Triad R-16A*).

T_2—5-watt output transformer, 5000 ohms to 3.2-ohm voice coil.

RFC_1, RFC_2—7-μh. r.f. choke (Ohmite Z-50).

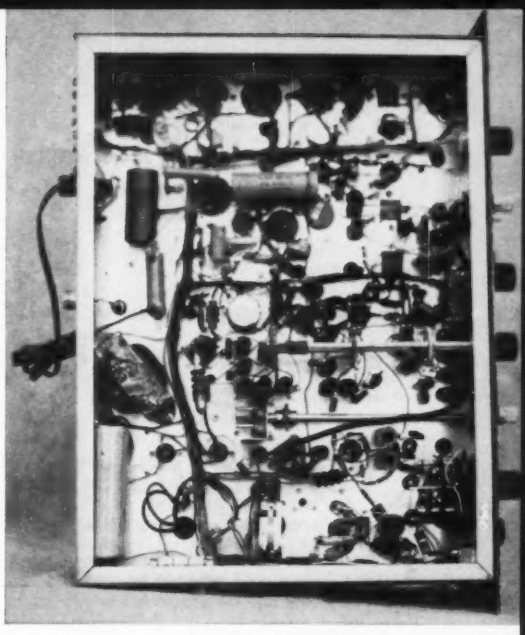
* Care should be used in substituting for this item if an increase in panel and cabinet height is to be avoided.

Exciter Coils

To allow better separation between the various coils in the bandswitch assembly, a shaft extension is used on the Centralab PA-302 6-inch shaft to lengthen it another inch. Surplus slug-tuned coils, as used in the W2EWL transmitter, were used here, and all were adjusted to frequency with a grid-dip meter. There are eighteen of them used in this transmitter! It is helpful, but not essential, if they all are of the same kind. Other coils that will work are Miller No. 4400, CTC, North Hills, and even those removed from old TV sets. The use of slug-tuned forms helps in the final adjustment of the transmitter and, of course, eliminates the need for trimming capacitors.

Fig. 4 shows the response curve of the bandpass coupler (L_{10} L_{11}, Fig. 1) when correctly adjusted, and with the band switch in the 80-meter position. The curve is formed by taking readings with a v.t.v.m. across the cathode resistor of the second 6X8 mixer as the output frequency of the first converter is varied. Frequency points for the low-frequency half of the range can be checked by listening for the 21-Mc. harmonics on the receiver. The slugs of L_{10} and L_{11} are peaked for the two frequencies indicated at the low-frequency end of the range.

The three miniature transformers in the phasing generator are similar to those used in the original W2EWL rig and are very convenient. For sources, see *QST* Ham–Ads.



Bottom view of the K4EEU s.s.b. exciter.

The author has built two transmitters of the above design and is convinced that it is bug-free if the illustrated chassis layout is used and good wiring practices are followed. QST

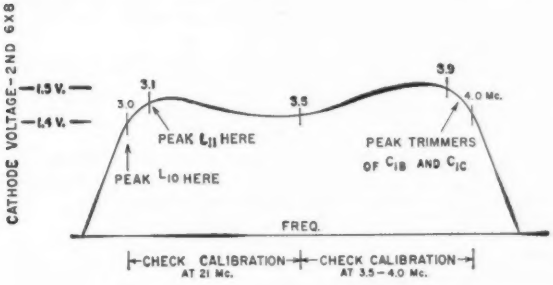


Fig. 4—Response curve of the bandpass coupler L_{10} L_{11} (Fig. 1) when correctly adjusted. Adjustment is discussed in the text.

Strays

W8DCB says he called CQ on 20 meters and was answered by both KØTOM and WØTOM.

—···—

K6EC claims a DX record for an auto horn QSO. Back in 1929 he was camping in Yellowstone Park and was called by 9ANZ, who wanted to pass along the word that the Giant Geyser was erupting. The distance was three miles. (Bet we get plenty of challengers on this one!)

—···—

G3HUA visited the States on a holiday, and by pure coincidence the first ham he met was K3HUA.

Think you need high power to get across the Atlantic? K4QOJ reports that he has worked G2FLC several times, with G2FLC's input power being a husky 4 watts!

—···—

KA2KM called CQ and was answered by W7CPY and W7CBY. No coincidence there, say you? Oh yes, there is. W7CPY (Director, ARRL Northwestern Division) and W7CBY are father-and-son. They live about 200 miles from each other and neither heard the other on the particular morning.

BY LOUIS D. BREETZ,* W3KDZ/W8QLP

The importance of exact balance in an s.w.r. bridge or directional coupler is demonstrated by the examples and curves given in this article. Primarily a matter of good construction and calibration, the directivity of the device — along with other factors such as the impedance and linearity of the r.f. voltmeter and the voltage regulation of the power source — must have careful attention if s.w.r. measurement is to be accurate.

Effect of Directivity in the Measuring Device

Possible Errors in V.S.W.R. Measurement

In view of the increasing popularity of measuring v.s.w.r. and reflected power by means of the standing-wave-ratio bridge, it might be of interest to re-examine the mechanism by which this is done, with a view to appreciating more clearly the limitations that exist.

The directional coupler is a device which samples power flowing in one direction but is insensitive to power flow in the reverse direction. In order to sample power in the reverse direction, it is necessary to reverse the orientation of the coupler in the transmission line. To eliminate the need for physically reversing the coupler connections, it is common practice to use two couplers built in one unit but oriented oppositely. To read the relative values of incident and reflected voltages directly from a meter, it is convenient to have both couplers identical in coupling factor and directivity.

"Directivity" is a characteristic which is highly important, but probably often ignored, when measuring v.s.w.r. with the s.w.r. bridge. Directivity is the characteristic by which the coupler discriminates between opposite directions of power flow. If a coupler is inserted in a transmission line that is terminated in an absolutely nonreflecting load, and is oriented to favor the incident wave, the fraction of the incident power that is sampled is the "coupling factor." For example, if one per cent of the power is coupled out, the coupling factor is said to be 20 db. Now, if the coupler orientation is reversed to favor power flow in the reflected direction, it may couple out 0.001 per cent of the incident power even though there is actually no reflected power. It is then coupling out an amount of power 50 db. down from the power in the line. Thus the discrimination between incident and reflected power is 50 — 20 = 30 db. The coupler then is said to have a directivity of 30 db.

While the actual power involved seems almost negligible, it will be shown that directivity is more important than most people suspect when this instrument is used to measure v.s.w.r.

Because the important characteristic is the ratio between the coupling in the forward direction and the coupling in the backward direction, we will ignore the actual value of the forward coupling factor and "normalize" to it — that is, set the forward coupling equal to unity and relate everything to it in terms of fractions.

If an antenna and line are mismatched, a fraction of the voltage associated with the incident wave is reflected back from the junction. The "reflection coefficient", K, is

$$K = \frac{V_B}{V_F}$$

where V_B = reflected voltage, and
V_F = incident voltage.

If a directional coupler is inserted in the line and is oriented to favor coupling of the incident voltage, the voltage actually coupled is

$$V_1 = 1 \pm KD$$

where D is the directivity factor of the coupler, expressed as a decimal rather than in decibels in this equation. The plus-or-minus sign indicates that the reflected voltage may be either completely in phase or completely out of phase with the incident voltage. In general, the relative phase of the incident and reflected voltages will not be known, since the phase varies with the position along the line at which the measurement is made.

To measure the reflected voltage, either the coupler is reversed or an additional but identical coupler is inserted in the line to favor the backward wave. The reflected voltage is then measured as

$$V_2 = D \pm K$$

The indicated reflection coefficient, K_m, is then

$$K_m = \frac{V_2}{V_1} = \frac{D \pm K}{1 \pm KD}$$

* 183 Joliet St. S.W., Apt. 2B, Washington 24, D. C.

It is easily seen that the measured value, K_m, of the reflection coefficient can vary appreciably because of D and the phase of the incident and reflected voltages. The v.s.w.r. as derived from the measured reflection coefficient is

$$VSWR_m = \frac{1 + K_m}{1 - K_m}$$

and thus can vary between the extremes[1]

$$VSWR_m = \frac{1 + \left(\frac{D + K}{1 - KD}\right)}{1 - \left(\frac{D + K}{1 - KD}\right)} \text{ or } \frac{1 + \left(\frac{D - K}{1 + KD}\right)}{1 - \left(\frac{D - K}{1 + KD}\right)}$$

For example, if a line has a true v.s.w.r. of 1.5 to 1, the actual magnitude of the voltage reflection coefficient is

$$K = \frac{VSWR - 1}{VSWR + 1} = \frac{1.5 - 1}{1.5 + 1} = \frac{0.5}{2.5} = 0.2$$

which, incidentally, represents 4 per cent reflected power. Now if the directional coupler used to measure it is a poor one — directivity equal to, say, 10 db. — it will discriminate by a factor of 0.316 between the backward and forward waves, and it can be demonstrated that it is indeed inaccurate as a v.s.w.r. measuring device:

$$\text{Forward coupler: } V_1 = 1 \pm KD$$
$$= 1 \pm (0.2 \times 0.316)$$
$$= 1 \pm 0.063$$
$$= 1.063 \text{ or } 0.937$$

$$\text{Backward coupler: } V_2 = D \pm K$$
$$= 0.316 \pm 0.2$$
$$= 0.516 \text{ or } 0.116$$

$$K_m = \frac{V_2}{V_1} = \frac{0.516}{0.937} \text{ or } \frac{0.116}{1.063} = 0.55 \text{ or } 0.109$$

$$VSWR_m = \frac{1 + K_m}{1 - K_m} = \frac{1.55}{0.45} = 3.44$$
$$\text{or } \frac{0.109}{0.891} = 1.24$$

as possible values of indicated v.s.w.r.

On the other hand, a very good coupler with a directivity of 40 db. (0.01 discrimination factor between voltage waves of opposite directions) would more accurately determine v.s.w.r. under the same conditions:

$$V_1 = 1 \pm (0.2 \times 0.01)$$
$$= 1.002 \text{ or } 0.998$$
$$V_2 = 0.01 \pm 0.2$$
$$= 0.21 \text{ or } 0.19$$

(The fact that one of these numbers should be negative can be ignored, since the r.f. phase has no significance after rectification in the voltmeter circuit.) Then

$$K_m = \frac{0.21}{0.998} \text{ or } \frac{0.19}{1.002} = 0.21 \text{ or } 0.19$$

and

$$VSWR_m = \frac{1.21}{0.79} \text{ or } \frac{1.19}{0.81} = 1.53 \text{ or } 1.47$$

It is not intended here to discuss techniques involved in designing directive couplers of high directivities or the method by which one may measure the directivity of a coupler. However, should an attempt to determine directivity be made, it is absolutely necessary that it be done with a line as nearly flat as possible. It is an extremely difficult measurement to make with any degree of accuracy since a line with a v.s.w.r. as low as 1.012 would give a measured directivity somewhere between 36.5 and 46.0 db., when the actual directivity is 40 db.

One should be cautious in quoting v.s.w.r. figures obtained by use of a device of this nature unless all its characteristics are known. Fig. 1 is

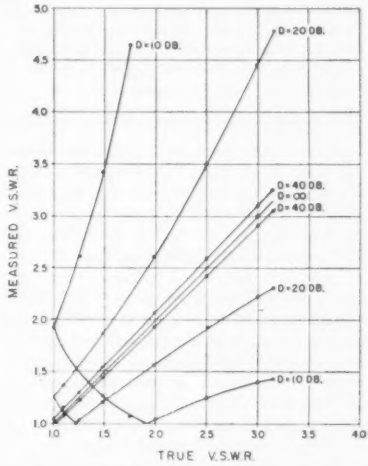


Fig. 1—Extreme values of indicated v.s.w.r. vs. actual v.s.w.r. for directional couplers having various directivity factors.

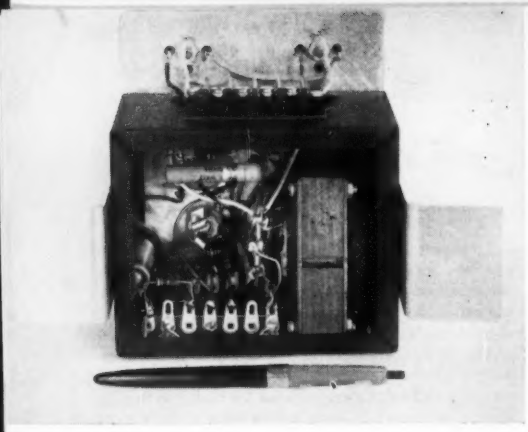
a graph showing possible extreme indicated values vs. actual v.s.w.r. for couplers of various directivities.

To determine whether a coupler has a high enough directivity to be dependable, one perhaps could insert it at various places in the line over a quarter-wave distance and see if the indicated v.s.w.r. changes appreciably. QST

ARE YOU LICENSED?

• When joining the League or renewing your membership, it is important that you show whether you have an amateur license, either station or operator. Please state your call and/or the class of operator license held, that we may verify your classification.

[1] The sign of the reflection coefficient will, of course, be the same for both the forward and backward measurements, in a given case. However, in the absence of a known reason for the finite directivity factor of the coupler it is safest to assume, in estimating the extreme limits of error, that the phase of the error voltage introduced by D can reverse when the coupler is reversed in the line. In these equations, this is equivalent to assuming that D can be either positive or negative. — *Editor.*



A 3 × 4 × 5-inch utility box is sufficient to house the modulation transfromer and all of the smaller components.

Transistor Modulator for Mobile Use

BY GUY L. FALCIONI,* W2CZM

25 Watts Audio—90 Cubic Inches

At a cost of about thirty dollars, you can build this 25-watt modulator occupying a fraction of the space required for an equivalent tube unit. It will also allow you to make full use of your high-voltage supply for the r.f. section.

ONE of the problems very often associated with home-brew mobile gear is that of adequately modulating the rig while still maintaining a decent power level in the r.f. section. Too often the power supply suffers under a very heavy load in order to provide both modulator and r.f. sections with power. As anyone active in the mobile field can confirm, all types of modulation schemes have been tried in the attempt to get good audio without having the unit become either too cumbersome or expensive.

Now that power transistors are available at moderate cost, the modulation problem can be approached from a new standpoint. The transistor is a "natural" for mobile use.

The unit to be described is based on a design originally published by Delco Radio,[1] and is a 12-volt 25-watt Class B modulator. Some design features were modified after building two units, keeping in mind ease of construction and cost. Some of the advantages of this type of modulator are: compactness (25 watts of audio in approximately 90 cubic inches), high efficiency, no warm-up, and low idling current when not modulating. In the author's installation, the unit modulates a 6146 stage running between 45 and 50 watts input.

Construction

The unit was constructed on a 4 × 5 × 3-inch utility box on which a ⅛-inch aluminum cover 5 by 6 inches was substituted. This provides a 2-inch overhang on one edge for mounting the power transistors, and also serves as a heat sink. Two transformers, plus gain control and mike jack, were also mounted on the cover (see the photographs).

For a modulation transformer the unit uses a 6.3-volt filament transformer turned backwards; that is, with the 6.3-volt 3-ampere winding toward the collectors. This transformer is mounted inside the utility box. Ample room is left for the input transistors, resistors and capacitors. It was found necessary to add an input filter on the 12-volt line to prevent hash from modulating the microphone current.

In the original design by Delco, the driver transformer used required rewinding of the secondary to provide a true center tap. To avoid this, a transformer having taps at 4 and 16 ohms was substituted. Since the impedance varies as the square of the turns ratio, the 4-ohm tap provides a center tap without the need for rewinding.

Transistor Mounting

Because the collector connection is common with the case of the transistor, mica spacers must be used between the transistor cases and ground. (Insulator package No. 1221264). These can be obtained in a special mounting kit from Delco distributors. Heat-sink insulated types are also available as an alternative to using the mica spacers.[2]

A four-lug terminal strip is located on top of the utility box to provide for the 12-volt and output connections of the modulator. Although wiring of the unit may appear difficult it becomes a relatively simple job if the internal wiring is done separately, before putting on the front cover.

Be careful to apply as little heat as possible when soldering any transistor connections. Either G.E. 2N190 or RCA 2N109 can be used for the input transistors. Several other types could also be used for the output transistors. However, the DS-501 should be easier to obtain than some since

* 1716 Kenyon Ave., So. Plainfield, N. J.

[1] *Transistor Application Note 6-B*, Delco Radio Division, General Motors Corp., Kokomo, Indiana.

[2] In these types, the case is anodized, the anodizing furnishing the required electrical insulation. One suitable type is the 3B645 available from Birtcher Corp., 4371 Valley Blvd., Los Angeles, Calif.

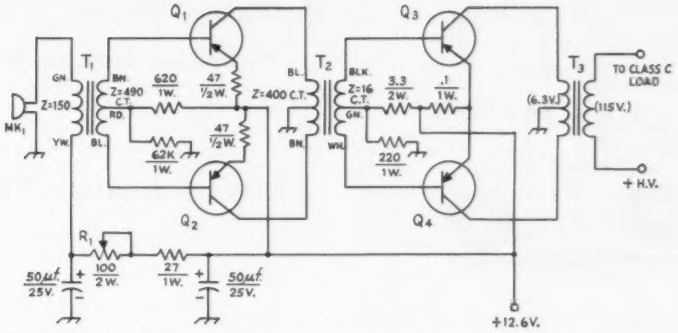


Fig. 1—Circuit of the 25-watt transistor modulator. Resistances are in ohms. Capacitors are electrolytic.

MK_1—Single-button carbon microphone.
Q_1, Q_2—2N190 (GE) or 2N109 (RCA).
Q_3, Q_4—DS-501 (Delco).
R_1—100-ohm 2-watt potentiometer.
T_1—150 ohms c.t. (c.t. not used) to 490 ohms c.t. (Thordarson TR-5).
T_2—400 ohms c.t. to 16 ohms, c.t., (see text) (Stancor TA-41).
T_3—6.3-volt c.t., 3-amp. filament transformer used as modulation transformer (see text) (Stancor P-5014).

it is sold as a replacement in car-radio service.

The author encountered a problem in trying to obtain a 0.1-ohm resistor used in the emitter connection of the DS-501 transistors. This was solved by winding a 0.1-ohm length of resistance wire over a 2-watt resistor used as a form. An alternative would be to purchase three 0.33-ohm standard half-watt resistors and wire them in parallel to obtain a value sufficiently close.

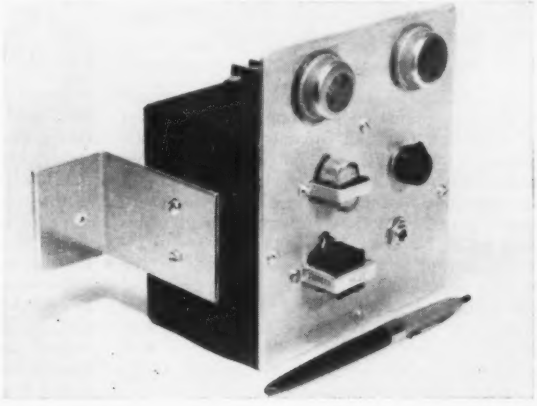
Testing

After wiring and construction of the unit is completed, testing for proper operation can be done in several ways. One method is simply to connect a 4000-ohm 10-watt resistor across the modulation transformer output connections and then place a d.c. ammeter in series with the 12-volt line, and watch the current variation while modulating. In the author's unit, idling current was about 700 ma., kicking up to above 2 amperes on peaks. Do not, under any circumstances, try to operate the unit without a load of some sort on the output terminals as this may damage the output transistors. Another method used was to place another 6.3-volt filament transformer back-to-back with the modulation transformer so as to bring the impedance down to a low level and connect a p.m. speaker to the 6.3-volt winding. Of course, a scope test could also be made after the unit is connected to the transmitter. The Class C load level can be adjusted for proper impedance matching.

The unit was connected in the author's installation so that it is turned on only while the transmit-receive switch is in the transmit position. An F1 carbon microphone was used with this unit.

The cost of constructing the unit from scratch should be somewhere in the neighborhood of thirty dollars. Results achieved, after approximately six months of operation have been very gratifying and on-the-air checks have brought complimentary remarks about the audio quality.

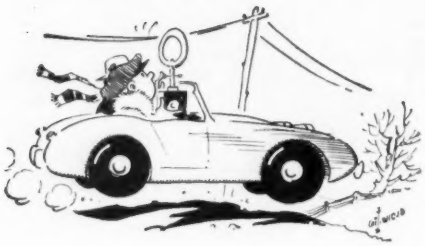
The author wishes to express his appreciation for the assistance of Mr. E. H. Daggett, K2MJH, in the design and testing of this unit. QST



The front cover of the modulator unit serves as a heat sink. The driver transformer and microphone jack are at the bottom, the microphone transformer and potentiometer control at the center, and the two power transistors at the top.

Methods of Source

Detection and Suppression



Power-Line Noise

BY RICHARD M. SMITH,* W1FTX

Many amateurs whose reception is being impaired by faulty power lines feel that nothing can be done about it. However, W1FTX has found power-company officials most cooperative in eliminating the source of interference — with a little help from the ham and the right approach.

You need not "throw in the towel" when your location seems plagued with persistent power-line interference. The power companies have learned a great deal in recent years about the techniques of reducing undesired radiation from their lines, and with the cooperation of the amateur who is experiencing noise interference, they can usually correct any trouble within their responsibility quite effectively.

In several cases within the author's experience, line noises severe enough to wipe out the amateur bands entirely from 21 Mc. through 144 Mc. were promptly and (so far) permanently cured. All that was required was willing cooperation on the part of the amateur in making the work of the power company a little less time consuming. Without this cooperation it is doubtful that anything would have been accomplished.

Don't Get Tough

Put yourself in the position of the manager of the average small power company. He receives a complaint from an amateur conveying the general impression that "You've got a line noise somewhere near here that's wiping out half of the spectrum. Better get it fixed!" This is enough to add gray hairs to any manager's already thinning scalp. Noise-locating equipment is not always immediately available, especially to the smaller branch offices. It is expensive gear, and the company is usually forced to spread it rather thinly over the entire service area. In addition, it means diverting a trouble-shooting crew from other work for what might be an extended period.

* R.F.D. 2, West Hill, Winsted, Conn.

Some of the sources of line noise are pretty tricky to locate. And then, of course, a fairly high percentage of the complaints will be found arising from sources outside of power-company responsibility, such as noise generated by equipment within a factory, hospital, or even a private home.

If, however, the manager gets a friendly call from an amateur stating that "I'm quite sure I've located a source of noise interference on or near pole number 276 on West Hill Road," the manager will be much more inclined to send someone out right away to investigate. From there on, relations will be good, and steps will be taken to eliminate the noise pronto. After all, a line noise means a loss of power, and the power companies are sharp enough to realize that they don't get paid for power leaks on their side of the meter!

How does the amateur find out that the noise that has been keeping him out of the DXCC is coming from a particular source? Well, it takes a little sleuthing, but it can be fun, once you get the hang of it. My own case is typical, and a brief rundown will give you some ideas to use in your own "Operation Trackdown."

The Trouble Starts

We moved into what promised to be a really super location in September of last year. It's high on a hill with a clear shot in all directions, out in the woods where we knew we wouldn't be bothered by the racket from neon signs, auto ignition, welders, and other electrical devices commonly found only in the city. The OM could already hear the rare stuff rolling in as he signed that big fat mortgage note. It would be worth it!

Antennas were put up — an 80-meter half-wave for use on the low bands, and rotary beams atop a 40-foot tower for six and two meters. And the signals really did roll in — for a time. Then followed some revolting developments. It started in late October, when the weather began to get cool and crisp (meaning dry). A racket, best described as a high-pitched buzz saw coupled directly to the end of the antenna, started blanketing every ham band from 21 Mc. up. It was

S9, plus enough to wipe out everything except the real rock crushers. If you're looking for DX, you don't usually want to work the loud ones. The weak ones just weren't there any more. Thinking that the XYL's refrigerator, or the oil burner, or something around the house had taken off on its own, a quick check was made of these and a few other obvious suspects, but nothing seemed out of whack inside the shack. After a few hours of impatient waiting for the noise to go away of its own accord, it was decided that maybe a little more scientific approach to the problem was in order.

Pin-pointing the Sound

The six-meter beam was rotated, and it told us that the noise peaked up strongest when the beam was pointed southwest, or down the road from the house. The next step was to take the 2-meter mobile rig [1,2] for a ride in that direction. With just a simple whip antenna on the receiver, the noise could be heard as soon as the car left the driveway. A cruise up and down the road showed that the noise had definite peaks and nulls — a standing-wave pattern of sorts. After several trips back and forth over the section of road where the peaks seemed loudest, one spot was found where the strongest peak of all occurred. Sure enough, it was right near one of the power company's poles. While listening on the receiver with the audio gain turned up full, the pole was tapped, first gently, and then a bit harder, with the head of an axe. (Don't let them catch you using the business end on their timber, boys!) As the pole vibrated from the blows, the noise became intermittent. Examination of the wires, insulators, and miscellaneous hardware at the top of the pole with field glasses disclosed nothing. It looked like any other pole, but it wasn't. It had an embossed aluminum tag tacked to it bearing its own distinctive pole number.

Help Arrives

At this point a phone call was placed to the office of the local power company. After a short discussion with their engineer, who seemed to be in complete sympathy with the situation, he agreed to send out a trouble shooter. This rosy-cheeked individual arrived at my home in due time, and asked if I was the one who had called to report some radio interference. He was invited into the shack to hear for himself. "Funny," he said, "I've never heard anything like that on the radio in the truck." Of course not. Power companies use f.m., but this fellow was no radio expert, so he didn't know about such things. I mention this just to forewarn you. You are the radio expert in this case, and don't be bashful about establishing this point. It will help you sell the job that is ahead of you.

A Loose Tie Wire

The trouble shooter, after receiving a short course in ham radio, was then escorted, truck and all, to the scene of the suspected pole. With the audio gain on the mobile receiver opened up wide so that he could hear what was happening even when he climbed the pole, the trouble shooter (let's call him Jack, because he sure was nimble) donned his irons and went up the pole. He checked all the insulators, because any power-company man will tell you that leaking insulators are always the cause of this kind of trouble. But don't believe him — until he proves his point. Well, it wasn't insulators in this case. Finally, being somewhat of an experimenter himself, Jack began to poke around up there among the kilovolts. Sure enough, after a bit of prodding, shaking the pole, and banging on the crossarm, he heard the noise become intermittent, as I had. Further poking showed that the cause of all this miserable racket was a short length of insulated wire used to tie the main distribution wire to one of the standoff insulators on top of the crossarm. They usually twist several turns around the main wire on either side of the insulator. The twists had loosened, and when the insulation was good and dry, corona discharge was taking place between the main wire and the tie wire. Jack snugged up the twists with his pliers, and the noise stopped.

We returned to the shack. He wanted to listen to the home receiver again to be sure. I could see that he was mentally scratching his head about it all, and he finally broke down and said, "First time I ever saw anything like that." Conversation with other power-company engineers indicates that not many of them are familiar with this type of noise source either, which is surprising but true.

Where there is one loose tie wire in a neighborhood there are almost always others, and this was certainly the case at my location. Before the winter was past, I had located the sources of no fewer than seven other noises, all being generated by loose tie wires. Seven times I called the power company, and seven times Jack, or his counterpart, came out to fix them. Another time we located a guy wire that was brushing up against a 4000-volt line as the lines swayed in a high wind. What a racket that one made!

Noise and the Weather

There is more to this story. Noises of this sort disappear in wet weather almost with the first drops of rain, and reappear after the line has dried out. They come back gradually, intermittent at first, then increasing in frequency of repetition until they blend into a steady roar. They are at their worst on cold, dry, winter days,

[1] Gonset Communicator.

[2] In the author's experience, car broadcast receivers have not been very effective in tracking down noise except in very obvious cases where the noise was extremely strong. Many types of interference, including the type discussed principally in this article, are bothersome only at frequencies higher than the 14-Mc. band and often are not audible at all on lower frequencies.

especially when it is windy. To locate them you sometimes have to cruise around in the chill winter blasts for a few hours until you can arrive at the scene of the offending source *while the noise is present*. Many times I have set out with the mobile receiver to return without having found the culprit. Upon returning to the home shack, I found that the noise had quit while I was in search of it. Yet on other occasions, the noise will persist for days, seeming to come from all directions with equal intensity. Don't let this fool you. It is probably coming from two or more sources at once, and the beam pattern of your rotary antenna just isn't sharp enough to pin any one of them down. You can be sure, however, that if you can hear the noise loud enough to bust up reception on your favorite band, it is probably being generated within a mile of your antenna. In rare instances, the source of the noise will be farther away than that, but in these cases, the noise is probably entering the receiver on the power line, rather than through the antenna. This is easy to check. Just disconnect the antenna, or if you're fussy, operate your receiver from an emergency supply independent of the company lines. If the noise is entering through the power line, the same general method of trackdown should be used. A directional antenna on the mobile receiver will be of great help, although it is not a must, and an S meter with which to plot the strength of the noise is also much better than an uncalibrated ear. About the only other equipment you will need is the aforementioned axe or, if you wish to avoid suspicion, use a sledge hammer, but with gentleness. A good sound whack on the pole will sometimes cause the noise to quit, temporarily, just as you are about to pin its source down!

I found the local power company most cooperative, and prompt attention was given to every complaint, especially after I had established my reputation with them as being right most of the time. Thus, it is important to be reasonably sure that you have found the real source of trouble before you yell for the power company's help.

Other Sources

If they don't cooperate, and I'm sure this will be the rare exception, a friendly suggestion to the manager that he review the FCC's latest regulations on interference with *any* radio service will be certain to bring results in a hurry. Use this only as a last resort, however, and then only after you are doubly certain that the noise is coming from the power lines. Of course, there are many other possible sources of radio interference — including the following, to name some of the more common ones and their characteristic noises:

Commutator motors: High pitched, tearing.
Corona: Hissing.
Faulty insulators: Rasping, or buzzing.
Corroded hardware on pole: Staccato, irregular.
Loose hardware on pole: Popping.
Fluorescent lamps: High pitched and rough hum.
Traffic lights: Regular clicks or pops.
Ungrounded conductor with static discharge: Irregular bursts of low-pitched static.
Spark ignition: Sharp, regular, staccato.
Welding arc: Frying.

If your power company engineers seem a bit baffled by noise problems, as some of them may be, suggest that they get a copy of a report entitled, *A Practical Handbook for Location and Prevention of Radio Interference from Overhead Power Lines*.[3] This report was generated by a U. S. Naval Civil Engineering Research and Evaluation Laboratory, at Port Hueneme, California. It is dated 21 November 1956. Project NY 411-002-1, Technical Memorandum M-116. This report is available to industry through the Armed Services Technical Information Agency (ASTIA), Knott Building, Dayton 2, Ohio. It is a *must* for all power company engineering departments, although few of them seem to have heard of it. To my pleasure, one of the prime causes of interference, according to the report, is my old friend the loose tie wire!

Other points covered in this report will be of general interest. If the noise seems to peak a short distance either side of the point where a feed line, or junction, leads away from the line, with a null right at the junction, check the feed line, too. It may be the path to the source. The reason for the apparent null at the junction is the impedance discontinuity caused by the junction. Similar misleading observations can be obtained where a line comes to a dead end, and for the same reason. So if you come up against a few puzzlers, don't give up. The noise has to come from somewhere, and you'll find it if you persist.

Loose Hardware

"Hardware" noises are also quite common, and these are apt to be the most difficult to pin down. It is no more difficult to locate the offending *pole*, however, than in the simpler case of the loose tie wire, and if it becomes necessary, the power company will replace everything on the pole until the culprit is found. It may be

[3] This publication has restricted circulation and may not be available to power companies except under certain circumstances.

something as obscure as leakage between two lag bolts screwed into neighboring spots on the pole. If metal crossarm braces are used, the difference in potential between them can be appreciable, because they are in intense electric fields, as well as magnetic fields. If the two pieces are insulated from each other by a corrosion film, or a small air gap, an abrupt arc-over can occur one or more times on each half cycle, resulting in a pulse rich in harmonics that will cover large chunks of the radio spectrum. Depending on the dimensions of the pieces of hardware involved, they can act as efficient dipole antennas at certain frequencies, radiating a husky signal. Hardware interference is usually found when two pieces of hardware are not securely bonded to each other, or are not permanently separated by an air gap of at least 1½ inches, or a path along wood of at least 2 inches. This, however, is something for the power-company men to handle. The amateur's job is usually over once he has pointed the finger at the pole involved.

The real key to the rapid elimination of your line-noise problems is your own attitude. If you take a cooperative attitude, and really try to do an effective job of helping the power companies find the source, they will do their part, and the noise will be cleared up. If, however, you take a get-tough attitude and refuse to stir from your easy chair to help them, you may have a long wait until you can hear those weak, rare ones coming through again. QST

Your "On-the-Air" Personality

BY K. A. JOHNSON,* W6NKE

Suppose you've just finished calling CQ on phone, flipped the switch from Send to Receive and are tuning around your frequency. Ah! Ha! You're in luck! There's a station calling you. He's loud and clear, so you tune him in and sit back to listen.

Now, what is it that you hear? Yes! The sound is the result of technical and electronic applications but above all, you hear a voice.

As you listen and the QSO continues, you are consciously and unconsciously receiving impressions and forming opinions regarding the fellow you're working. In fact, he's doing the same about you.

Your mind receives these impressions, analyzes them and arrives at opinions. Consciously or unconsciously you develop a like or dislike of varying degree for the person you're listening to. In addition, you will form an opinion of his education, technical ability and character. Of course, your contact will have done the same about you.

Now you ask, what is this guy driving at. Simply this. We've all spent many hours improving our s.w.r., grid drive, audio quality, etc. Why not spend a little time and effort to improving our "On the Air" phone personality.

One reaction I've received to this is, "Phooey, I'm interested in radio, not announcing." This may be true, but what you say, and how you say it is an important part of phone work. Why not do a good job all the way around.

One suggestion is to try improving your diction. Speak slowly and distinctly, but be careful not to sound affected. Not only is this type of speech more enjoyable to listen to, it's more intelligible under QRM and QRN conditions.

Another suggestion is to improve the expression in your voice. Let your voice rise and fall with your words and sentences. Take a moment to notice the expression and inflections used by a professional announcer. These inflections convey sincerity, friendliness, interest, sympathy, etc. Your thoughts can be conveyed more clearly and will command much more attention and interest through the use of inflections in your voice.

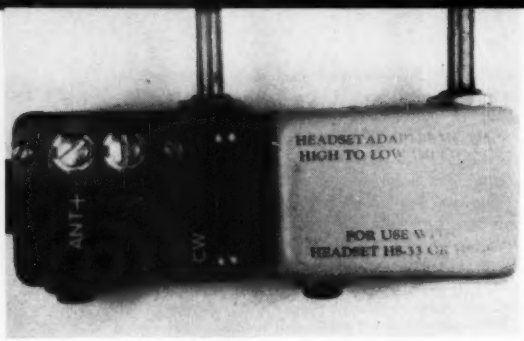
A third suggestion is to increase your vocabulary. Stay away from the nine-syllable words, but build up a good vocabulary of common words to avoid monotony. Hearing the same words and phrases repeated plus little or no voice inflection is the type of speech that causes one to browse through the latest copy of *QST* while waiting for the other to sign.

In addition, try developing your conversational ability. Don't attempt to become a verbal encyclopedia. Start by learning some interesting facts about your locality. A few geographical or historical facts can be of value and interest when used at the proper point in a conversation. Along with the exchange of technical information, a little conversational initiative on your part can bring about some of the most interesting and informative QSOs.

Everyone wants to make a good impression upon those he meets. This is an inherent human characteristic. The impressions we create on phone can be controlled only by our voices and speech. From a general standpoint, the overall impressions of amateur radiotelephone operations are created by the thousands of voices heard on our phone bands.

Is there a better reason for developing our "On-the-Air" personalities? QST

* 21835 Rodax St., Canoga Park, Calif.



The completed "Gimmick" and the surplus unit from which it was made.

BY E. B. BLETT,* W8CBM

A Pocket Tuning Aid for the Sightless with a Variety of Uses

The simple transistor unit described here by W8CBM was designed primarily to assist those amateurs who are without sight in tuning a transmitter. However, its utility for other purposes around the ham shack will make it appreciated by everyone.

The "Gimmick"

SOME seven years ago, when the W8CBM portable was designed, it included what was then a most novel device — a transistor c.w.-phone monitor. While it is still in use, the circuitry has been forgotten. One thing not forgotten, however, is that it used a point-contact transistor that wholesaled at $29.00.

Circuit

The general idea was quite simple. A short piece of stiff wire, extended alongside the 6146 final, picked up some r.f. that was rectified by a crystal diode. This was the power supply for a transistor audio oscillator. (See Fig. 1.) The return for the power supply was fed through one pole of a double-pole switch which had its other pole in the beat-oscillator cathode circuit. The audio oscillator's high-impedance transformer winding was coupled capacitively to the receiver's phone jack. This forced c.w. operators who wanted to hear their own sending to use headphones. This is particularly appreciated in Field Day operations — especially after midnight.

When the portable was put into use we discovered that the monitor included two bonus rewards. With the c.w. beat oscillator switched off, the transistor served as a rectifier and phone signals were demodulated. It was then an excellent phone monitor. With the switch in the c.w. position, it was found that the tone produced by the transistor oscillator varied in inverse proportion to the final-amplifier current. Using this feature, our blind fellow coffee dunker Cletis, W8HAI, was able to tune and load the transmitter as quickly and as well as anyone else. One time, this cost us the use of the portable for a couple of months while Cletis' transmitter went to the factory. In the seven years of use, only one defect showed up. As the interior of the portable warmed up, the audio tone would go up, and if the transistor got warm enough, it would refuse to oscillate. A fan, which the portable really needed anyway, cured this.

Two years ago some more experimenting was done with transistor c.w.-phone monitors and a number of different models were made. Recently, W8HAI requested that a transistor tuning aid be made to replace the "Oscar" used on his Collins and subsequently on his Viking 500. (The "Oscar" was a tube audio oscillator, in which the final plate current, running through a tertiary winding of a transformer, changed the tone. A hazardous, but effective device.) His requirements were that the new device be equally effective, whether used with his 27-watt portable or the 500-watt rig, and not require any connections to the high voltage, or any power supply. Additional requirements that we added were that it be small enough to carry in his pocket and equally effective on a rig of any power. A trial of one of the earlier models of the "Gimmick" indicated that, with the addition of a potentiometer, we were in business.

Construction

The basic unit utilizes the case and all the components of a surplus MC-385-A high-to-low-impedance headphone adapter. The transformer was removed from its case (to gain space) and the

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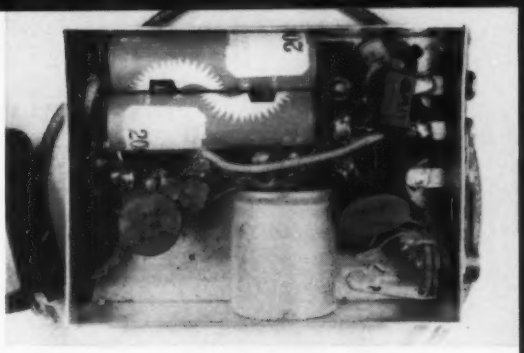


Interior view of the break-in unit mentioned in the text.

wax from it used to secure the transformer in the MC-385-A case. A subminiature 1-megohm potentiometer controls the amount of r. f. voltage rectified and fed to the transistor. This oscillator works on about 0.3 volt of r.f. A short wire is connected to the ground terminal of the "Gimmick" and to a battery clip. In use, this is usually clipped onto a screw or switch on the receiver panel. A battery clip and wire about four feet long connected to the antenna (+) or terminal is clipped to the microphone, transmitter panel or any other place having a difference of at least 0.3 volt r.f. from the receiver connection, when the transmitter is on. So far, regardless of operating frequency, in every shack tried, we have been able to find enough voltage difference to operate the "Gimmick" — even with 20-watt transmitters within four feet of the receiver. In the unit made for Cletis, the phone plug was removed. In the previous units, which were made primarily for monitoring, the phone plug was connected to the phone jack through a 2200-ohm resistor. When the unit is plugged into the receiver jack, no ground connection is necessary. This permits monitoring your own sending, and receiving the other fellow on the same phones.

Other Uses

The "Gimmick" is a good code-practice oscillator. A 1½-volt battery with a key in series may be connected between the antenna (+) and ground (−) terminals, the positive going to the antenna terminal.

The potentiometer is really an unnecessary refinement for most operators, if not a nuisance. This was included for W8HAI's convenience so that he could use the same point for r.f. pickup, when using either his low-power portable or his 500-watt rig. Ordinarily, the antenna (+) clip can be moved to a different pickup point to increase or decrease the signal as desired.

The switch, of course, is for shifting from c.w. to phone monitoring. Still another use has been found for the "Gimmick." I find that I can more easily balance out the carrier in my s.s.b. rig using it instead of watching the meters.

If the "Gimmick" is to be used primarily for phone monitoring, reducing the emitter bypass capacitor from 1 μf. to 0.001 μf. will increase the output. This will also reduce the sensitivity so that the antenna may have to be clipped to a point having a higher r.f. voltage. Actually, the smaller capacitor is better if the "Gimmick" is used only as a monitor, but will not permit as large an oscillator frequency change as is desirable when used as a tuning aid.

Break-In Unit

A somewhat larger unit has been constructed for use in c.w. monitoring with break-in. The oscillator portion is almost identical to the "Gimmick." Some of the r.f. picked up to power the oscillator is rectified and used to bias a transistor audio amplifier to cutoff. The output of the receiver is fed into the transistor amplifier and its output to the phone jack. The 1-stage transistor is not needed to supply more audio, but is used to provide a means of killing the audio whenever the key is closed. In use, a breaking station can be heard through a series of dots. The audio amplifier section is powered by two Penlite cells. The battery drain is so low that no switch is included.

In a series of tests, it was found that a transmitter can be tuned better and faster with the "Gimmick" than with a meter. All the operator needs to know is the location of the plate tuning capacitor, the loading control and final-grid drive control. When lightly loaded, resonance is indi-

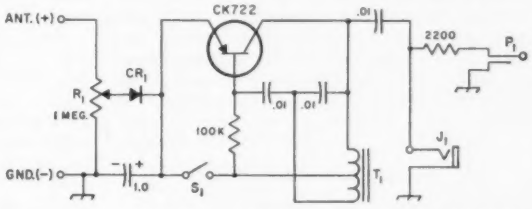
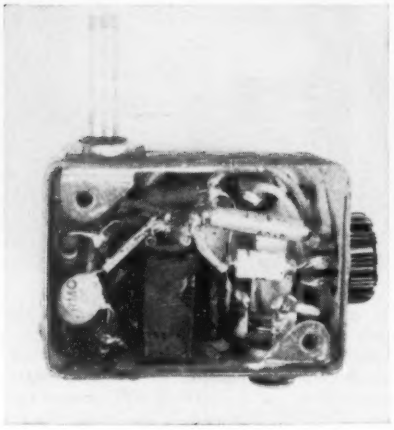


Fig. 1—Circuit of the "Gimmick." Capacitances are in μf. and resistances are in ohms. The 1-μf. capacitor is electrolytic; others may be paper or ceramic. Resistors are ¼ watt.

CR_1—1N34 or similar.
J_1—Miniature headphone jack.
P_1—Headphone plug.
R_1—1-megohm potentiometer.
S_1—S.p.s.t. slide switch.
T_1—Audio step-down autotransformer (see text). If surplus unit mentioned in the text is not available, it may be possible to substitute a miniature plate-to-line transformer, such as UTC SO-3 or SSO-3, connecting one end of each winding together to form the tap, the remaining end of the secondary going to the junction of the two 0.01-μf. capacitors, and the remaining end of the primary to collector. Windings must be properly polarized, reversing secondary connections if necessary.



Interior view of the "Gimmick." After assembly is complete, wax from the original unit is melted and poured over the transformer.

cated by a very decided lowering of the pitch. At optimum loading, there is a smaller change as the plate capacitor is tuned through resonance. If the final is loaded beyond optimum, the oscillator may oscillate only at the resonant frequency — even when only slightly overloaded the "dip" is narrowed considerably. The grid drive can be set by the volume of the tone.

If you have a blind ham friend, make him a "Gimmick." It will free him from a specially-wired transmitter and let him operate in any shack. You might as well make two while you're at it. When you test his, you will want one for yourself. QST

Concerning the Type 1461 Tuning Capacitor in the HBR-16

It develops that at least part of the confusion mentioned by Ted Crosby[1] respecting capacitance ratings of the Miller type 1461 variable was caused by the issuance of two different models under the same type number. In digging into the reason for a few reports of insufficient band coverage with the coils specified in October *QST*, it turned out that the capacitors used had 7 plates per section (3 stator and 4 rotor plates), while the one used by W6TC himself had 5 plates per section (2 stators and 3 rotors). Although the latter has fewer plates, it actually has higher maximum capacitance than the 7-plate type because its plates are differently shaped. The 7-plate type probably was an earlier version, since the 5-plate kind seems to be the one now available on dealers' shelves.

If you're building the HBR-16 and happen to have acquired the 7-plate model of the 1461, you can use the modified coil specifications given below. These were determined experimentally by Ted after he acquired a sample of the 7-plate type and installed it in his receiver. Only the bandspread tap positions require changing in the L_1 and L_2 coils; otherwise these coils remain the same. The new tap positions are as follows:

Band	*Tap on L_{1A} and L_{2A}*
3.5 Mc.	30¼ turns
7 Mc.	9½ "
14 Mc.	3¼ "
21 Mc.	2⅛ "
28 Mc.	2⅜ "

The principal changes are in the h.f. oscillator coils, L_{3A}, and the accompanying fixed padding capacitances. In every case the tickler windings, L_{3B}, remain as given in October *QST*, page 14, as do also the values of C_1, C_2 and C_3. The new data for L_{3A} are as follows:

3.5 Mc.: 17½ turns of No. 22 enam. close-wound, tapped at 17¼ turns. C_4: 5-$\mu\mu$f. N750 ceramic.

7 Mc.: 7½ turns No. 22 enam., length 29/32 inch, tapped at 7¼ turns. C_4: 130-$\mu\mu$f. silver mica in parallel with 10-$\mu\mu$f. N750 ceramic.

14 Mc.: 8½ turns No. 22 enam., length 21/32 inch, tapped at 8¼ turns. C_4: 200-$\mu\mu$f. silver mica in parallel with 10-$\mu\mu$f. N750 ceramic.

21 Mc.: 5½ turns No. 22 enam., length ⅞ inch, tapped at 5¼ turns. C_4: 220-$\mu\mu$f. silver mica in parallel with 10-$\mu\mu$f. N750 ceramic.

28 Mc.: 5½ turns No. 22 enam., length ½ inch, tapped at 5¼ turns. C_4: 50-$\mu\mu$f. silver mica in parallel with 5-$\mu\mu$f. N750 ceramic.

[1] Crosby, "The HBR-16 Communications Receiver," *QST*, October 1959.

Strays

Paul Isaacs, W2JGQ, says many hams are plagued with TVI and BCI, but he has a new problem — BSI or Baby Sitters Interference. He says a young neighbor complained that she was baby sitting and listening to soft music on the radio when "CQ CQ 15 DE W2JGQ" blared out, waking the babies who promptly began to shriek. Wait 'til Sweepstakes!

• *Beginner and Novice —*

Converting Two Popular Surplus Transmitters for Novice Use

BY LEWIS G. McCOY,* W1ICP

The supply of surplus "Command Sets," both receivers and transmitters, seems to be inexhaustible, and so is the ham's ability to modify them for his special purposes. For the low-frequency — 40- and 80-meter — Novice bands, it would be hard to find a more economical way of getting started. Here's a Novice modification of the transmitters that differs from others in that reconversion to v.f.o. is practically instantaneous.

Crystal Control for the BC-457 and BC-459

A FEW YEARS BACK *QST* carried an article [1] describing the conversion of an ARC-5 transmitter for Novice use. The article proved to be so popular that the issue soon became a collector's item. Because these units are still in good supply it appears that another article on the subject would be worthwhile.

For those newcomers to the hobby who are not familiar with the SCR-274N and AN/ARC-5 equipments, a word of explanation is in order. This equipment consists of several transmitters and receivers designed for use in military aircraft. The two series are substantially identical in circuit and construction. Of the transmitters, two are of particular interest to the Novice. These are the BC-457 (part of 274N) or T19 (ARC-5) covering 3 to 4 Mc., and the BC-459 or T22, 7 to 9.1 Mc. Essentially, the transmitter circuit consists of a 1626 triode variable-frequency oscillator that drives a pair of 1625s in parallel, which for Novice use can be run at 75 watts input. In addition to the 1626 and 1625s the transmitters include a 1629 magic-eye tube, which was used as a resonance indicator with a crystal for checking the dial calibration. The tubes have 12-volt heaters connected in series-parallel for 24-volt battery operation. The BC-457 and 459 are available from surplus dealers at prices ranging from five to fifteen dollars each, depending on condition.

Several methods have been described for converting the transmitters to crystal control for Novice use, but most of them didn't take into consideration the reconversion required to change back to v.f.o. when the Novice became a General-Class license holder.

In the modification to be described, the Novice requirement for crystal control is met by using a separate crystal-controlled oscillator. The output of the external oscillator is fed into the transmitter through a plug that fits into the 1626 oscillator socket. The 1626 is not used. The transmitter modifications are such that when it is desired to restore the transmitter to v.f.o. operation the external oscillator is unplugged and the 1626 is put back in its socket. No wiring changes are needed to go from crystal control to v.f.o.

In addition to the external oscillator, a power supply is required for the oscillator and transmitter, and certain wiring changes are needed to make the transmitter itself suitable for amateur use. These changes consist primarily of removing two relays, changing the tube heater circuit for operation on 12 volts instead of 24 volts, and the addition of a power plug. The changes are not at all complicated, and to make them easy to follow they are outlined below in a step-by-step sequence.

Transmitter Modifications

The 80- and 40-meter transmitters are practically identical except for frequency range, and the modifications are the same in both. Remove the top cover and bottom plate. Remove the tubes and crystal from their sockets so there will be no danger of breaking them as you work on the transmitter. If the sockets are not marked by tube types, mark them yourself so you'll know which tube goes where.

* Technical Assistant, *QST*.

[1] Smith and Bradley, "The Novice Conversion of a 'Command' Transmitter," *QST*, Nov., 1951.

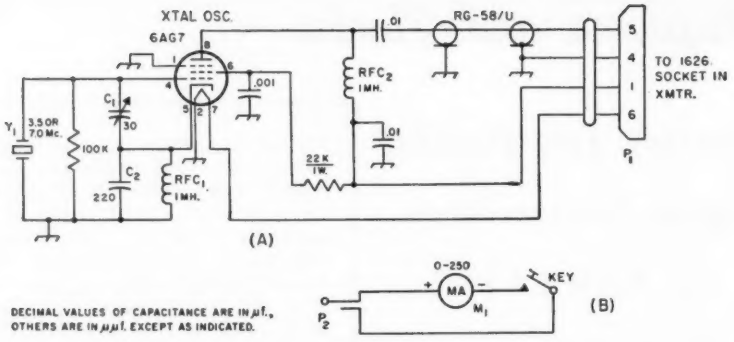


Fig. 1—(A) Circuit diagram of external crystal-controlled oscillator. Unless otherwise specified, resistances are in ohms, resistors are ½ watt. The 0.01- and 0.001-μf. capacitors are disk ceramic. (B) Method of connecting the milliammeter in series with the key.

C_1—3-30-μμf. trimmer.
C_2—220-μμf. fixed mica.
M_1—0-250 d.c. milliammeter.
P_1—Octal plug, male (Amphenol 86-PM8).
P_2—Phone plug.
RFC_1, RFC_2—1-mh. r.f. chokes.
Y_1—3.5- or 7-Mc. Novice-band crystal, as required.

The following modifications are required:

1) Remove the antenna relay (front panel) and control relay (side of chassis) and unsolder and remove all wires that were connected to the relays with the exception of the wire going to Pin 4 on the oscillator socket.

2) Remove the wire-wound resistor mounted on the rear wall of the transmitter.

3) Unsolder the wire from Pin 7 of the 1629 socket and move it to Pin 2. Ground Pin 7.

4) Unsolder the wires from Pin 1 of the 1625 closest to the drive shaft for the variable capacitors and solder the wires to Pin 7. Run a lead from the same Pin 1 to the nearest chassis ground point.

5) Unsolder all leads from the power socket at the rear of the chassis and remove the socket. The socket can be pried off with a screwdriver.

6) Unsolder the end of the 20-ohm resistor (red-black-black) that is connected to Pin 4 on the oscillator socket and connect it to Pin 6 of the crystal socket. There is also a lead on Pin 4 that was connected to the keying relay; connect this lead to the nearest chassis ground point.

7) Mount an octal chassis connector (Amphenol 86-RCP8) in the hole formerly occupied by the power socket. Install a solder lug under one of the nuts holding the plug mounting.

8) Wire the octal plug as shown in Fig. 2. One of the leads unsoldered from the original power socket is red with a white tracer. This is the B+ lead for the 1625s. The yellow lead is the screen lead for the 1625s and the white lead is the heater lead. Although the manuals covering this equipment specify these colors, it's safer not to take them for granted; check where each lead actually goes before connecting it to the new power socket. The lead from Pin 1 on the power socket to Pin 6 on the crystal socket is the oscillator plate-voltage lead. The leads from Pins 7 and 8 on the power plug to Pins 1 and 6 on the oscillator socket are new leads to carry power to the external crystal-controlled oscillator. The lead from Pin 4 of the power plug to Pin 2 on the 1629 (resonance indicator) socket is the 12-volt heater lead.

The complete Novice setup, in this case using the 80-meter (BC-457) transmitter. Note the key jack at the lower-left corner of the transmitter panel. The crystal oscillator is connected to the transmitter oscillator-tube socket with a short length of cable terminating in an octal plug. A small notch should be cut in the transmitter cover to provide clearance for the cable when the cover is installed.

The power transformer, rectifier, and choke are mounted on top of the power-supply chassis at the rear, and the control switches are mounted on the wall as shown. Remaining components are underneath.

9) Mount a closed-circuit phone jack at the lower left-hand corner of the front panel. Connect a lead from the ungrounded phone jack terminal to Pin 6 (cathode) of either of the 1625 sockets. This completes the modification of the transmitter.

Crystal-Controlled Oscillator Details

The external crystal-controlled oscillator circuit, shown in Fig. 1, uses a 6AG7 in the grid-plate oscillator circuit. Either 80- or 40-meter crystals are required, depending on the band in use. A tuned plate circuit is not required in the oscillator; it was found that more than adequate grid drive could be obtained with the setup as shown.

Output from the oscillator is fed to the transmitter through an 8-inch length of RG-58 coax cable. The cable is terminated in an octal plug, P_1, which is plugged into the oscillator tube socket in the transmitter. Power for the external oscillator is obtained through this socket.

The crystal-controlled oscillator is built in and on a $4 \times 2 \times 2\frac{3}{4}$-inch aluminum box. The tube and crystal sockets are mounted on top of the box and the remaining components inside. Layout of parts is not particularly critical but the general arrangement shown in the photograph should be followed to insure good results.

In the completed setup, oscillator and amplifier, the cathodes of the 1625s are keyed and the crystal oscillator runs continuously during transmissions. It is thus necessary to turn the oscillator off during standby periods, and this is accomplished by opening the B-plus switch on the power supply. This method is used in preference to keying the oscillator and amplifier simultaneously because keying the oscillator is likely to make the signal chirpy. With amplifier keying the signal is a real T9X.

Power Supply

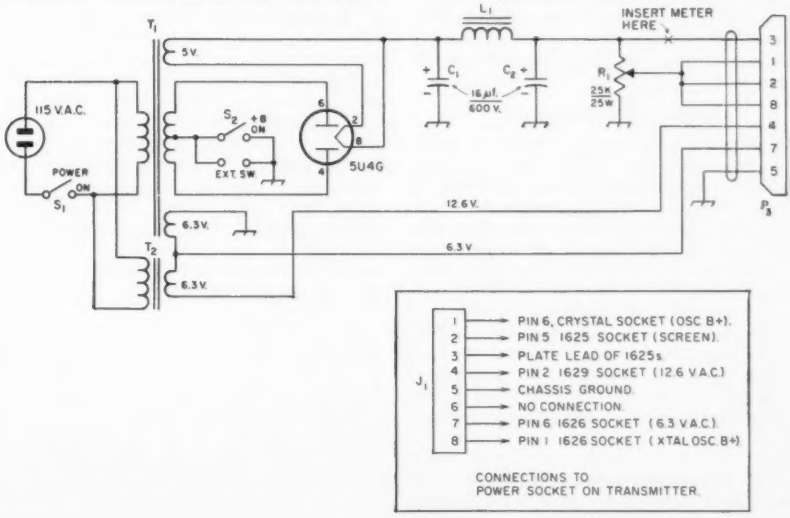
Fig. 2 shows the circuit of the power supply, which uses a 5U4G rectifier and a capacitor-input filter. The power transformer, T_1, is a type made by several manufacturers. To obtain the necessary 12.6 volts for the heaters, a 6.3-volt filament transformer is connected in series with the 6.3-volt winding on T_1. This setup also will provide 6.3 volts for the heater of the 6AG7. Current requirement for the 6AG7 heater is 0.65 amp. and for the 1625s, 0.9 amp. total.

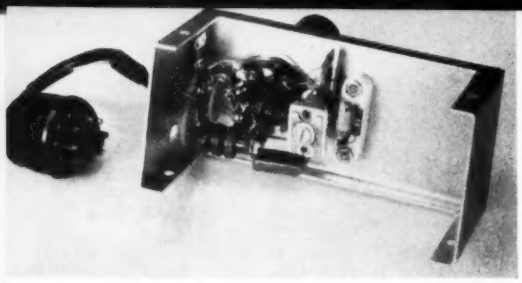
To turn off the plate voltages on the transmitter during stand-by periods, the center tap of T_1 is opened. This can be done in two ways; by S_2, or by a remotely-mounted switch whose leads are connected in parallel with S_2. A two-terminal strip is mounted on the power-supply chassis, the terminals being connected to S_2 which is also on the chassis. The remotely-mounted switch can be installed in any convenient location at the operating position. A single-pole, single-throw switch can be used for this purpose or, if desired, a multicontact switch can be used to perform simultaneously this and other functions, such as controlling an antenna-changeover relay.

The high-voltage and heater leads are brought out in a cable to an octal plug, P_3, that connects

Fig. 2—Circuit diagram of power supply.

C_1, C_2—16-μf., 600-volt electrolytic (Sprague TVA-1965, Aerovox PRS).
J_1—Octal chassis-mounting connector, male (Amphenol 86-RCP8).
L_1—1- to 2-hy., 200-ma. filter choke, TV replacement type (Stancor C2325 or C2327, or equivalent).
P_3—Octal cable connector, female (Amphenol 78-PF8).
R_1—25,000 ohms, 25 watts, with slider.
S_1, S_2—Single-pole, single-throw toggle switch.
T_1—Power transformer, 800 volts center-tapped, 200 ma.; 5 volts, 3 amp.; 6.3 volts, 6 amp. (Knight 61G414, Triad R-21A, or equivalent).
T_2—Filament transformer, 6.3 volts, 3 amp. (Triad F-16X, Knight 62-G-031, or equivalent).





This bottom view of the crystal oscillator shows the arrangement of components. Terminal stips are used for the cable connections and also as a support for C_1, the feedback capacitor.

to J_1 on the transmitter. The length of the cable will, of course, depend on where you want to install the power supply. Some amateurs prefer to have the supply on the floor under the operating desk rather than have it take up room at the operating position.

The supply shown here was constructed on a $3 \times 6 \times 10$-inch chassis. The layout is not critical, nor are there any special precautions to take during construction other than to observe polarity in wiring the electrolytic capacitors and to see that the power leads are properly insulated.

When wiring P_3 don't connect the B-plus lines to Pins 2 or 3, the amplifier plates and screens, at first. It is more convenient to test the oscillator without plate and screen voltages on the amplifier.

When the supply is completed, check between chassis ground and the 12.6-volt lead with an a.c. voltmeter to see if the two 6.3-volt windings are connected correctly. If you find that the voltage is zero, reverse one of the windings. If you don't have an a.c. meter you can check by observing the heaters in the 1625s. They will light up if you have the windings connected correctly. Incidentally, leave B plus off, by opening S_2, for this check.

Next, set the slider on the bleeder resistor, R_1, at about one-quarter of the total resistor length, measured from the B-plus end of the bleeder. Be sure to turn off the power when making this adjustment. With the tap set about one-quarter of the way from the B-plus end of the bleeder the oscillator plate and amplifier screen voltages will be approximately 250 volts.

Testing the Transmitter

You should now be ready to check the transmitter. For doing this you'll need a key and meter connected as shown in Fig. 1. When P_2 is plugged into the jack in the transmitter it will measure the cathode current of the 1625s. The cathode current is the sum of the plate, screen and control-grid currents. Some amateurs prefer to install the meter in the plate lead so it reads plate current only. This can be done by opening the B-plus line at the point marked "X" in Fig. 2, and inserting the meter in series with the line. However, unless you have more than one meter, don't install it in the power supply setup in this way until after you have made the tests described below.

Insert the external oscillator plug, P_1, into the 1626 socket and connect P_3 to the transmitter. Plug P_2 into the key jack. With S_2 open, turn on the power and allow a minute or two for the tubes to warm up. Next, close the center-tap connection, S_2, on the power transformer. Set the transmitter dial to the same frequency as that of the crystal you are using and close the key. You should get a slight indication of grid current on the meter. There is no plate or screen current because you don't have screen or plate voltages on the amplifier. If you don't get a reading, adjust C_1 to the point where you do.

The next step is to peak the amplifier grid circuit — that is, the 1626 v.f.o. tank — for maximum grid-current reading. The v.f.o. trimmer capacitor is in an aluminum box on the top of the chassis at the rear. There is a ½-inch diameter hole in the side of the box; loosen the small screw visible through this hole, thus unlocking the rotor shaft of the trimmer capacitor. Move the rotor-arm shaft in either direction, observing the meter reading as you do, and find the position that gives the highest reading. This should be something more than 10 ma.

You are now ready to connect the plate and screen voltage leads to P_3. Be sure to turn off the power supply before making the connections!

The first test of the rig should be with a dummy load; a 115-volt, 60-watt light bulb can be used for this purpose. The lamp should be connected between the antenna terminal and chassis ground. However, to make the lamp take power it may be necessary to add capacitance in parallel with it. A receiving-type variable capacitor having 250 $\mu\mu$f. or more maximum capacitance will be adequate for the job.

Turn on the power and allow the tubes to warm up, but leave the key open. Set the antenna coupling control on the transmitter to 7 or 8, and set the variable capacitor connected across your dummy load to about maximum capacitance. Next, close the key and adjust the antenna inductance control for an increase in cathode current. Turn the frequency control for a dip in current reading. You'll probably find that the indicated frequency differs from that of the crystal you are using, but don't worry about it.

Adjust the three transmitter controls, antenna inductance, antenna coupling, and frequency, along with the variable capacitor across the lamp load, until the lamp lights up to apparently full brilliance. The cathode current should be between 150 and 200 ma. With the transmitter fully loaded, adjust C_1 in the crystal oscillator so that the lamp brilliance just starts to decrease. This

(Continued on page 160)

Grounded Screen-Grid Operation for Tetrodes

BY V. S. CAMPBELL,* K7BYQ AND W. S. SKEEN,* W7EPM

A tetrode with control grid and screen tied together to form a high-μ triode for a grounded-grid circuit makes a very simple arrangement. However, this type of operation invariably results in excessive control-grid dissipation. This article shows a simple method of avoiding this difficulty.

Limiting Control-Grid Dissipation

GROUNDED-GRID operation is attaining more and more popularity, and is especially attractive when tubes are used which permit dispensing with bias and screen supplies. Other advantages may be listed, in addition to this simplification of circuitry. In particular, no loading of the exciter with noninductive resistors is required, and a large percentage of the driving power appears in the output of the final.

Control-Grid Dissipation

Listening around the ham bands, one comes to the conclusion that tubes readily available do not quite fit the application, if a kilowatt input is desired. 304THs are quite popular, but require fixed bias to hold the resting plate current down to a safe value. Most tetrodes require no bias if the screen and grid are tied together for a high-μ triode connection. The static plate current is then within safe limits, but the combined screen and grid current, under operating conditions, is objectionably high, approaching the plate current in magnitude. This not only presents an undesirable load to the exciter, but may result in exceeding the rated grid dissipation. The control grid draws the lion's share of the combined grid and screen current, but is least able to handle the dissipation. Screen grids are commonly rated at from two to four times the dissipation of the control grid. What is needed is a device to force the screen to carry its fair share of the load.

Reducing Control-Grid Current

If the screen were to receive more excitation than the grid, our difficulties would be solved. Recent articles appearing in amateur publications have described the construction of bifilar filament chokes wound with enameled wire on 1-inch-diameter forms of materials such as micarta, bakelite, or dry broomstick. It is simplicity itself to tap down on these chokes a suitable distance for the grid connection, as shown in the circuit diagram of Fig. 1, instead of grounding the grid directly. This provides a voltage divider approximately equal to the turns ratio.

The screen-to-grid amplification factor of most tetrodes, such as the 4-65A, 4-400A, and similar tubes, is approximately 5. With the screen and grid driving voltages proportioned in this ratio, it was reasoned that the grid and screen currents would be at least somewhere near equal. This proportion is obtained, of course, by tapping down from the filament end of the bifilar choke $\frac{1}{6}$ of the total winding length.

In order to obtain some idea of operating conditions to be expected, a 4-400A was set up under static conditions, and a comparison made between the 5-to-1 ratio of screen-to-grid voltage, and with the grids tied directly together. These tests revealed that, with a plate voltage of 500 (approximating the $e_{p\min}$ to be expected), and with the grids tied together, a plate current of 140 ma. was obtained with a grid/screen voltage of 30. The combined grid current was 100 ma.!

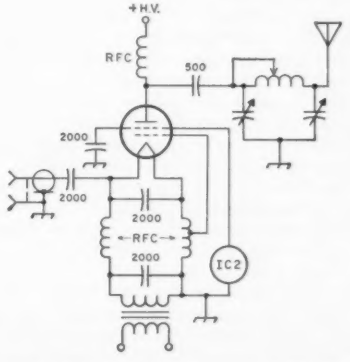
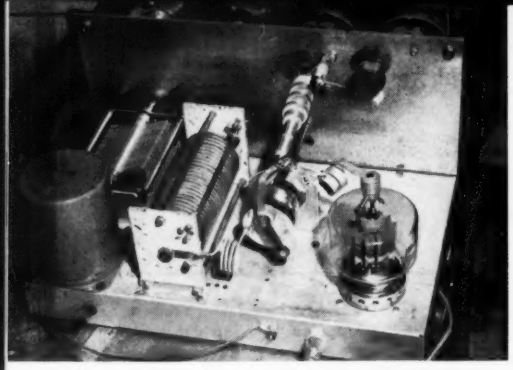


Fig. 1—Circuit of the grounded-screen amplifier with the control grid returned to a tap on the bifilar filament choke.

* Eitel-McCullough, Inc., Salt Lake City, Utah.



Typical layout for a grounded-screen amplifier with pi-network output. The input capacitor is of the vacuum-variable type. In this instance, the meters are shielded by a subpanel. The tube is a 4-400A. Most of the components are surplus items.

With the 5:1 ratio, the same plate current of 140 ma. was obtained with the screen at 75 volts and the grid at 15 volts. The respective grid currents were 10 ma. for the screen and 18 ma. for the grid, or a combined current of only 28 ma. — only 28 per cent as high as for the direct connection. Of course, the screen voltage was now 2½ times as high as the previous value of 30, but this does *not* mean that 2½ times as much drive is required.

There is considerable degeneration involved in grounded-grid operation, and with the grid tapped down on the filament choke ⅕ of the distance from filament to ground, it sees only about ⅕ of the degeneration or inverse-feedback voltage. The actual additional excitation required will be from 25 to 40 per cent of that required for the triode connection. However, since the total grid dissipation is reduced, a much larger percentage of the power from the driver reappears in the output.

The ratio of 5:1 is not necessarily an optimum value. The grid current was found to exceed the screen current only at low drive. Under normal operating conditions, the screen current was found to be about twice the grid current. A lower turns ratio might therefore be acceptable, requiring less drive but still not exceeding the grid dissipation.

Practical Operating Conditions

Now for practical cases. An extrapolation of the curves obtained from the static tests on the 4-400A gave some indication of the amount of grid and screen driving voltages that would be required for 1-kw. input. Fortunately, there is no need to guess about these matters. Eimac maintains an Amateur Service Department, and an Application Department, and upon request to them, the plate curves will be supplied.[1]

Since this type of operation approximates Class B, the operating conditions may be calculated accordingly. Assuming that an input of 1 kw. with a plate voltage of 3000 is desired, the plate current will be 325 ma. (to be on the safe side). The peak current, i_{pmax}, will then be π times the average current, or pretty close to 1 ampere. Power output (P_o) is calculated from

$$P_o = \frac{(E_b - e_{pmin})\ (i_{pmax})}{4} = \frac{3000 - 500\ (1.0)}{4}$$

$$= \frac{2500}{4} = 625 \text{ watts.}$$

This represents an efficiency of 64 per cent and a safe plate dissipation of 375 watts under conditions of sustained, or c.w. drive. In addition, a large percentage of the power delivered by the exciter appears in the output, and is roughly equal to the exciter P_o minus screen and grid dissipation.

Grid and Screen Dissipation

Both screen and grid dissipation can be calculated approximately from:

$$P_g = \frac{(\textit{peak grid voltage})\ (\textit{peak grid current})}{2}$$

For the screen, this equals $\frac{(320)\ (0.2)}{2}$,

or 32 watts, with 3.5 watts grid dissipation. These figures are all well within the maximum ratings for this tube, the latter being 35 watts and 10 watts for the screen and grid, respectively. Thus, such an amplifier is suitable for c.w. or a.m., as well as s.s.b. where the low average characteristic of speech waveforms is normally relied on to avoid exceeding grid dissipation. In fact, the operating conditions are almost identical with those for normal Class C operation.

Average screen and grid currents were calculated by dividing the peak currents by π. This brings us to a consideration of drive requirements. Since the grid dissipation is a small part of the total, we will not be far off by considering the 4-400A as a triode, with the screen as the control grid. This allows us to use the usual formula for total power required from the driver, in grounded-grid operation:

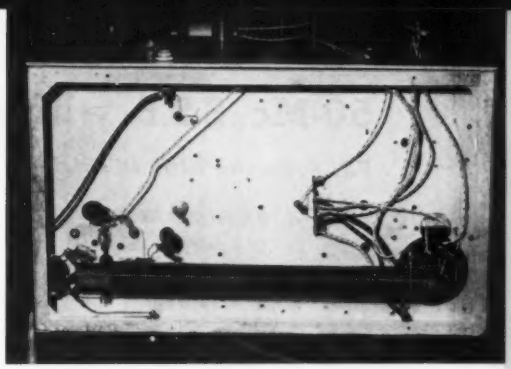
$$P_d = \frac{e_{gmax}\ (I_{pm} + I_{gm})}{2}.$$

Taking I_{pm} (peak fundamental plate current) as ½ i_{pmax}, or 0.5 ampere, this becomes

$\frac{320\ \ (0.5 + 0.2)}{2} = 112$ watts. The combined screen and grid dissipation is 35 watts, so 77 watts of the exciter power will be delivered to the antenna, neglecting circuit losses.

Now for a comparison of calculated and actual

[1] Eimac advises that there is a possibility that similar curves for other tetrodes will be available in the near future; also constant-current curves.



Bottom view of the grounded-screen amplifier showing the mounting of the tapped bifilar filament choke.

operating conditions. A 4-400A was easily driven to an input of 1 kw. with slightly more than 100 watts from the exciter. Judging by the color of the plate, the plate dissipation was well under 400 watts. The screen and grid currents were 62 ma. and 24 ma., respectively, for a sustained input of one kilowatt. Good results were obtained in c.w., a.m. and s.s.b. on 80 and 40 meters.

However, when attempts were made to drive the amplifier on 20 meters, it was found that the bifilar choke in use was too large to permit full input. Also, the impedance with such a large choke presented an undesirable load to the exciter. It is probable that proper loading of some of the popular exciters built from kits, where the output is usually tuned with a pi network designed to work into a resistive load of not over 600 ohms, would be found impossible.

Further experimenting showed that a smaller choke would permit full input on 20 meters as well as on the two lower-frequency bands. This choke consisted of two strands of No. 14 enameled wire close-wound simultaneously on a 1-inch-diameter form to a winding length of 6 inches. The grid tap was placed at 1½ inches from the filament end of one of the two windings, the transformer end of the same winding being grounded, as in Fig. 1. The voltage drop across this choke, using a 4-400A tube, is 1.3 volts which is just right for operating the 5-volt filament from a 6.3-volt filament transformer. Experimentation with an even smaller choke should make possible operation on 20, 15 and 10 meters, but it is doubtful that a single choke could be designed that would work satisfactorily on all five bands.

Other Tubes

This takes care of the 4-400A, a popular tube capable of handling a kilowatt input with ease. How about other tubes? An interesting article recently appeared in one of the amateur publications, describing the use of four 4-65As in parallel, in grounded grid, with the screen and grid tied together. K7BYQ had constructed such an amplifier. It performed very well, but the grid current meter was sometimes pinned at 250 ma.! It took only a few minutes to install the grid tap on the bifilar choke, after which the grid current was reduced to 20 ma., with 50 ma. for the screen current — this for the same input in both cases of 400 ma. at 2000 plate volts. The same rig was used for a quick check on the 4-400A calculations.

The accompanying photographs show the amplifier used for the experimental tests. The bottom view shows the original filament choke with the grid tap at about one-fifth the total number of turns from the top. The bypassed resistor connected at this tap was used for metering purposes. A grid-current meter would have to be mounted on stand-off insulators to reduce its capacitance to ground, since the grid is not at ground potential. In regular operation a grid meter is not necessary, a screen-current meter alone being adequate. If the tube socket is positioned as shown, with the two filament terminals toward the top, short leads will result. Don't forget the bypass directly from screen terminal to ground. QST

Strays

Hugh Quattlebaum, K4BFY, has started a one-man museum in Blackville, S. C. He has gathered early radio equipment and has it on display in the Shamrock Hotel. Now he has formed a board with K4DOA, K4JOQ and K4ETB; they plan to incorporate the museum as a non-profit organization to save antique rigs that "otherwise seem doomed to the city dumps." Says K4BFY: "In just a few years since radio started, quantities of historically priceless equipment has been destroyed. I feel certain amateurs will come through with a lot of gear for this permanent display. Any donor will have a plate attached to the item, giving him full credit."

—···—

Don Short, KØQVN, of Lincoln, Neb. needed Minnesota for his WAS, so he called that state and was answered by KNØPVV in Rochester, Minn. — who turned out to be Don Short, too. Now the Dons are looking for more hams with the same last name to form a "Short Circuit Net."

50-Mc. S.S.B. with the Collins KWM-1

V.H.F. Service with All Original Operating Conveniences

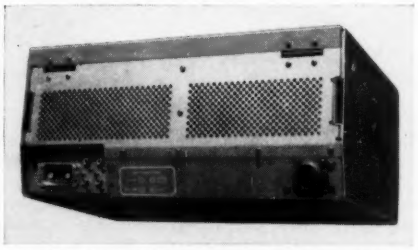
BY R. H. BAHNEY,* W8WM

Conversion of the Collins KWM-1 for s.s.b. reception and VOX transmission on 50 Mc. is entirely feasible. The method described here makes available the operating features of the KWM-1 on 50 Mc., and the modifications required are of such a minor nature that they have little effect on the original equipment.

External power may be used for the 50-Mc. accessories, or all but the heater current can be obtained from the KWM-1 supplies. When reasonable precautions are taken with the 50-Mc. outboard gear, the s.s.b. signal transmitted and the performance in receiving are comparable in every way to the admirable qualities of the original equipment on 10, 15 and 20 meters.

The block diagram, Fig. 1, shows how it is done. Built into a single outboard unit are a 50-Mc. converter for reception, and a mixer, driver and amplifier for 50-Mc. s.s.b. output. A crystal oscillator on 28.7 Mc. running continuously furnishes the heterodyning voltage for both transmission and reception at 50 Mc. The KWM-1 serves as a tunable i.f. on reception and as a source of s.s.b. excitation on transmitting, tuning 21.3 to 21.5 Mc. in both instances. This gives tracking coverage in the KWM-1 manner from 50.0 to 50.2 Mc. Other crystals can be obtained to increase this coverage, of course. When the dial reads zero the frequency is 50.0 Mc., and at 100 the frequency is 50.1. The receiving converter has a 6AG5 r.f. stage, and a 6U8 pentode mixer. The triode section of the 6U8 is the crystal oscillator. The transmitting mixer is a 6AG7. It is followed by another 6AG7 amplifier and a pair of 6146s in the final stage.

* Box 204. Put-in-Bay, Ohio.



Rear view of the KWM-1 showing the fitting added at the lower right, to take off the four connections for the 50-Mc. conversion unit.

When separate power supplies are used for the 50-Mc. unit no permanent modifications need be made in the KWM-1, though convenience is served if the four connections which must be made are brought out on a power fitting installed on the rear wall of the unit, as shown in the photograph. The points of connection are readily accessible when the bottom cover is removed and the relays involved can be identified by referring to the bottom view photograph (Fig. 5-1) in the KWM-1 instruction book.

Leads are bypassed with 0.001 capacitors at the power connector. They are as follows:

1 — Ground on Receive — 7th contact on Relay K_1.
2 — 260 volts on Receive — 1st contact on Relay K_3.
3 — 260 volts on Transmit — 3rd contact on Relay K_3.
4 — 260 volts, Transmit and Receive — 2nd contact on Relay K_3.

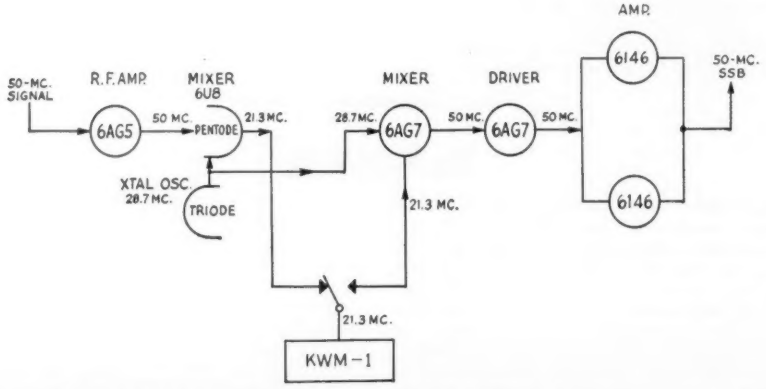


Fig. 1—Block diagram of the outboard unit for 50-Mc. operation with the KWM-1. A continuously-running oscillator on 28.7 Mc. provides injection for both receiving and transmitting mixers.

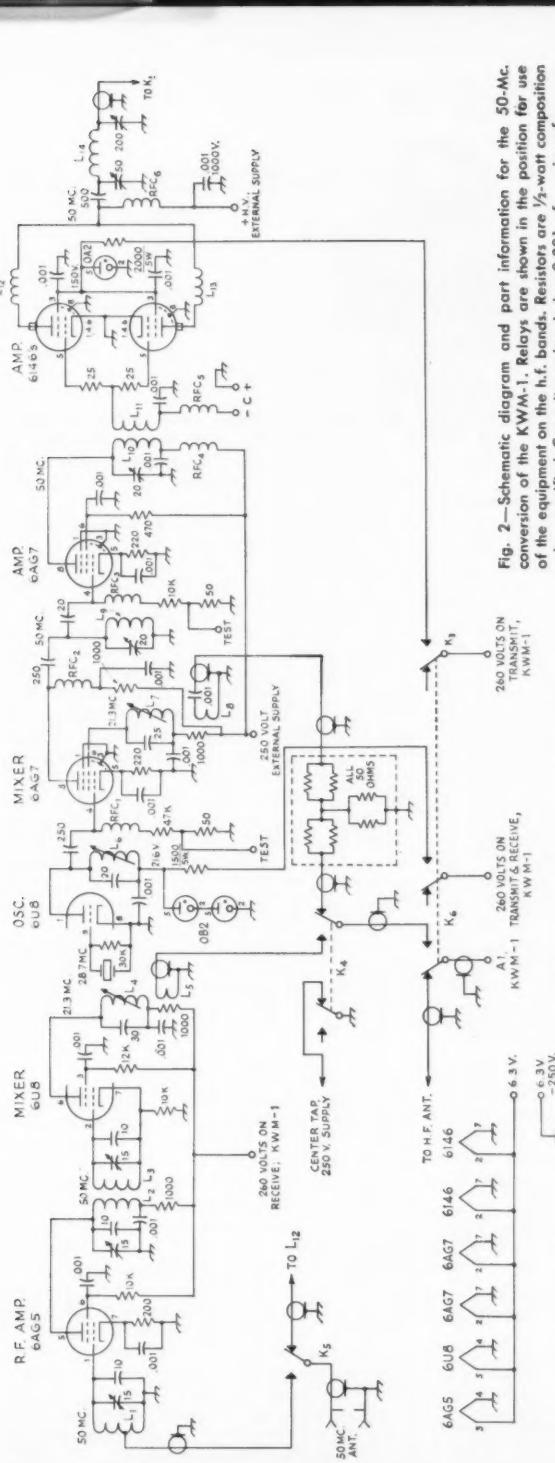


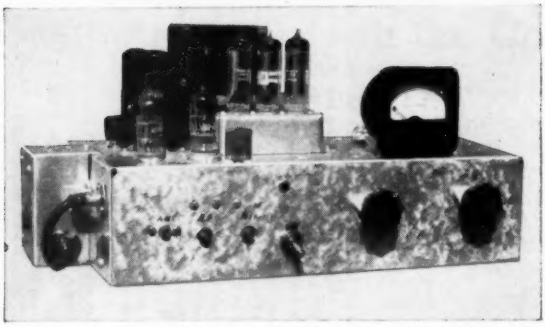
Fig. 2—Schematic diagram and part information for the 50-Mc. conversion of the KWM-1. Relays are shown in the position for use of the equipment on the h.f. bands. Resistors are ½-watt composition unless specified. Capacitor values below 0.001 μf. are in μμf.

K_1—D.p.d.t. a.c. relay; see text.
K_2—S.p.d.t. a.c. relay; see text.
K_3—Coaxial relay with 2 sets of auxiliary contacts.
L_1—6 turns No. 20 tinned, ½-inch diam., ¾ inch long. Tap at 2 turns.
L_2, L_3—8 turns like L_1, ⅞ inch long.
L_4, L_7—10 turns No. 24 d.c.c., close-wound on ⅜-inch iron-slug form.
L_5—3 t. No. 24 d.c.c. at B-plus end of L_4
L_6—8 turns, like L_4
L_8—3 turns No. 24 d.c.c. at B-plus end of L_7.
L_9, L_{10}—7 turns like L_8.
L_{11}—2 turns No. 20 insulated, interwound in B-plus end of L_{10}.
L_{12}, L_{13}—5 turns No. 20 tinned, ¼-inch diam., ¾ inch long.
RFC_1–RFC_5, incl.—7-μh. solenoid r.f. choke (Ohmite Z-50).
RFC_6—21-μh. solenoid choke (Ohmite Z-28).
Resistors in attenuator—50-ohm, 1-watt, noninductive.

The Circuits

Referring to the schematic diagram, Fig. 2, the received 50-Mc. signal enters the 6AG5 amplifier through a tuned circuit, L_1. Inductive coupling, L_2L_3, transfers the amplified signal to the grid of the 6U8 pentode, the plate of which is tuned to 21.3 Mc., the intermediate frequency. Injection at 28.7 Mc. from the crystal oscillator in the triode portion is coupled through stray and inter-electrode capacitance. Output at 21.3 Mc. is inductively coupled to the "A1" terminal of the KWM-1. The amplifier and mixer circuits for receiving are powered from the 260-volt circuit of the KWM-1 that is hot only on receiving. The oscillator section takes its power from the KWM-1 lead that is hot on both transmit and receive. The oscillator voltage is maintained at 216 volts by two OB2 regulator tubes. This was found necessary to eliminate a slight change in voice pitch at the start of each period of transmission, when voice control is used.

In transmitting the 28.7-Mc. energy is capacitively coupled to the grid of the 6AG7 mixer. The 21.3-Mc. s.s.b. signal from the KWM-1 is link-coupled to the screen circuit, L_7. A simple attenuator having two 50-ohm carbon resistors in parallel in



Outboard unit for 50-Mc. operation with the KWM-1 designed by W8WM.

each leg is inserted in the line to the mixer, to put some load on the KWM-1, and still not overdrive the mixer screen. The KWM-1 gain is operated just barely open.

The 50-Mc. energy resulting from the mixing action in the 6AG7 is taken from the plate circuit and capacitively coupled to the grid of a second 6AG7, this one an amplifier. Its plate circuit is inductively coupled to the grids of the two 6146s in the final amplifier. Note that resistors are used in the grid leads and parasitic-suppression chokes in the plate leads of the 6146s. The value of the grid resistors was quite critical, and any lesser value allowed the amplifier to take off on its own.[1]

Other circuits were tried for driving the final amplifier, but capacitive coupling turned out to be inefficient because of the high input capacitance of the tubes in parallel. Cathode injection was tried in the mixer, but better results were achieved with the screen injection shown.[2]

Plate voltage for the 6AG7s and the 6146s is taken from an external supply. The screen voltage for the 6146s is obtained from the KWM-1 at "260 volts on Transmit" and is reduced to 150 volts by an 0A2 regulator tube, as seen in Fig. 2. A 6.3-volt supply for the heaters and for relays K_4 and K_5 is shown in Fig. 3. The transformer center tap is also utilized for a variable bias supply for the 6146s, by means of a reversed filament transformer and a selenium rectifier.

Control Circuits and Relays

Switching the KWM-1 from 10–15–20 operation to 6 is accomplished with the coaxial relay, K_6, in Figs. 2 and 3. This relay is energized when S_1 on the 6-meter equipment (Fig. 3) is closed. Auxiliary contacts on this relay also close the "260 volts on Transmit" and "260 volts on Receive and Transmit" to the 6-meter rig. This was necessary to prevent the regulator tubes in the 6-meter unit from operating when the KWM-1 is used on its intended bands.

Relay K_4 (Fig. 2) switches the coax attached to "A1" on the KWM-1 from converter output to transmitter input, as well as closing the center tap of the 250-volt power supply to ground on transmit. Relay K_5 throws the 6-meter antenna from converter input to transmitter output. Relays K_4 and K_5 are in series across the 6 volts d.c., and are energized on receive by the "Ground on Receive" contact on the VOX-operated relay, K_1, in the KWM-1. These low-voltage relays were placed in series in preference to using one double-pole double-throw relay, to simplify wiring and cut down losses due to long coaxial leads inside the chassis. Further, on VOX operation, time is required for sequence operation of two relays, and we desired the least possible additional delay in voice-control work. Relays K_4 and K_5 can be any small relays that will work on low-voltage a.c. Their coils can be wired in series or parallel, depending on their voltage ratings.

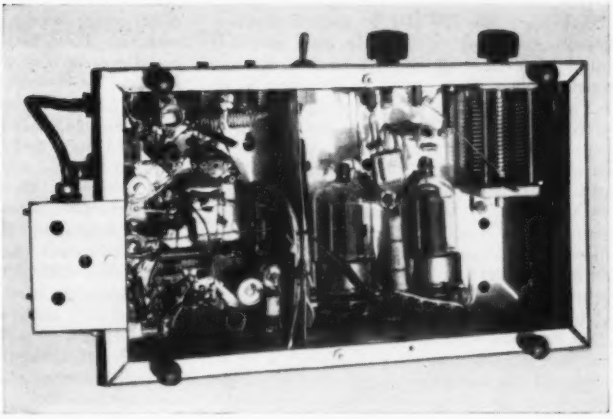
With this method no trouble has been experienced, even on one-word breaks. The bias and plate voltage remain on the final during reception, and the screen voltage is applied on transmitting by relay K_3 in the KWM-1.

Construction

Front and bottom views of the outboard 6-meter unit are shown in the photographs. The chassis is 3 by 7 by 12 inches. The two 6AG7s are side by side at the left rear. They tend to look like one large tube in the picture. The 6AG5 and 6U8 are at the left front. The crystal is on the front of the chassis, with the regulator tubes on a raised portion in back of it. The T-pad attenuator is in a separate ventilated aluminum box on the left end of the chassis, with the coax for the 21.3-Mc. energy from relay K_4 running into it. The coaxial antenna socket is just in back of the upper end of the coax. From left to right on the front wall are the tuning adjustments (screwdriver-type trimmers) for the antenna, r.f. and mixer circuits in the converter. The toggle switch is S_1, and the two knobs are for the tuning and loading capacitors in the amplifier.

[1] The builder has a choice here. He can neutralize the 6146 amplifier for complete stability (and probably eliminate the need for a 6AG7 amplifier stage) or he can lower the power sensitivity of the 6146s by inserting resistors in the grid circuit as shown. — *Editor.*

[2] In congested areas where TVI is likely to be encountered the builder of this equipment should check carefully for unwanted mixer products. The second harmonic of the KWM-1 output is on 42.6 Mc., in the i.f. range of most current TV sets. The second harmonic of the crystal-controlled oscillator is on 57.4 Mc., a sensitive spot in Channel 2. Unwanted products of the various harmonics may fall in other TV channels. If TVI from these sources appears the unwanted frequency causing the TVI can be trapped out most readily at the mixer plate or first amplifier grid circuit. — *Editor.*



Bottom view of the 50-Mc. conversion unit. Ventilated compartment at the left contains the attenuator for the 21-Mc. s.s.b. signal from the KWM-1.

The bottom view shows the unit tipped back from the front-view position. The 6146s and associated components are in the large compartment at the right, with a shield running the full width of the chassis to isolate them from the rest of the layout. The mixer and r.f. amplifier components can be seen at the upper left, with the oscillator slug-tuned coil just below the converter antenna coil, at the left. In the lower right corner of the smaller compartment are the rectifier and electrolytic capacitors of the bias supply, and the transmitter mixer coil. The driver coil, L_{10}, is at the left edge of the smaller compartment just below the center.

The original intention was to boost the output of the crystal oscillator with a 6AG7 amplifier, but tests showed the output of the 6U8 triode to be adequate. The 6AG7 was then put to work as a 50-Mc. driver, which was definitely needed with the amplifier design as shown.[1] This explains the unconventional location of the driver. The writer suggests that the mixer and driver positions be interchanged, thus allowing a shorter lead from L_{11} to the final grids.

Adjustment

The receiving converter should be set up for use by first resonating the oscillator plate coil, L_6, at 28.7 Mc. and the mixer plate coil at 21.3 Mc. with the aid of a grid-dip meter. Make sure that the crystal oscillator is working by listening for its note at 28.7 Mc. on a communications receiver. If it is working it should now be possible to hear signals on 50 Mc. The tuned circuits should be peaked for best reception. As the tuning range is limited to 200 kc. there is no problem in getting uniform response, so the stages may be peaked for maximum gain. If other crystals are to be used, and uniform response across more than 200 kc. is desired, a flat-topped response may be obtained by stagger-tuning the coils L_2, L_3 and L_4. L_1 should be adjusted for best signal-to-noise ratio, rather than maximum gain. The crystal frequency should be exactly right, if the calibration accuracy of the KWM-1 is to be preserved on 50 Mc.

The transmitter adjustment should start with no plate voltage on the final. Put the KWM-1 in the tune position, at 21.3 Mc. With the VOX gain full counterclockwise, (PTT on) advance the microphone gain to obtain a reading of S3 with the meter switch in the P.A. position. Couple a grid-dip meter (in the power-indicating position) to the 6AG7 mixer screen coil, L_7, and tune L_7 for maximum indication at 21.3 Mc. With voltage on the 6AG7s, 50-Mc. power should be available at L_9. Tune L_9 and L_{10} for maximum 50-Mc. indication.

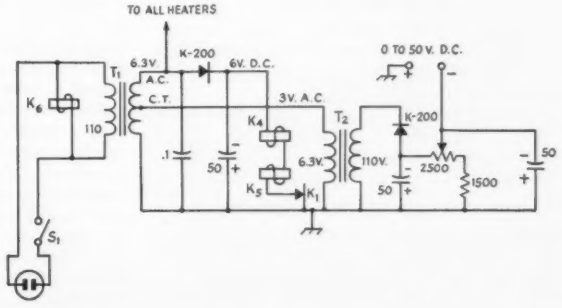


Fig. 3—Heater and bias supply and relay circuits for the 50-Mc. conversion. Relay contact marked K_1 is the ground-receive contact (contact No. 7) on the KWM-1 relay, K_1.

Next place the KWM-1 in the off position. Connect a dummy load to the final amplifier output (a 50-ohm carbon resistor will do) and adjust the final plate circuit to resonance at 50 Mc. with the aid of a grid-dip meter. Now put the KWM-1 on s.s.b., and with the VOX gain at 12 o'clock adjust the bias supply resistor to give about 40 volts at the grid of the final. Voltage can be applied to the final plates at this point, and there should be no plate current, as the screen voltage is not on. Turning the VOX gain full counterclockwise will apply screen voltage, and less than 50 ma. should appear in the plate circuit of the final. Adjust the bias resistor to obtain a reading of 30 ma.

The tune position of the KWM-1 can now be tried and the microphone gain advanced for an increase in the final plate current. All tuned circuits should be given a final repeaking at this point. Next, remove plate and screen voltage from the final and check for r.f. feedthrough at the final plate coil, L_{12}. Should there be appreciable feedthrough of r.f., neutralization may be necessary, though an increase in the value of the grid resistors may prevent instability by lowering the amplifier's power sensitivity.[1]

The transmitter may now be operated by placing the KWM-1 in the s.s.b. position, setting the VOX gain at 12 o'clock and advancing the microphone gain to obtain about 200 ma. on the final plate meter on voice peaks.

Using the KWM-1 Power

For those who wish to delve deeper into the labyrinth of the KWM-1, the method outlined below requires only a 6.3-volt heater supply. All other power is supplied by the KWM-1. The writer suggests, however, that the 50-Mc. outboard gear be first adjusted with external power supplies, as described previously. To use the KWM-1 power entirely, proceed as follows:

1) Remove the 0A2 regulator tube from the outboard unit, and short out the 2000-ohm resistor in the final screen lead.

2) Disconnect the bias supply, and connect to the minus 65-volt bias supply in the KWM-1.

3) Connect the "260 volts on Transmit" to the plate and screen leads of the 6AG7s, in place of the external 250-volt supply.

4) Bring out the high-voltage lead from the KWM-1 and use it in place of the 500-volt external supply.

Below are tabulated readings for the KWM-1 in normal service and with the 50-Mc. outboard unit, for operation with the KWM-1 supplies and from external power. Readings are for the 6146s at peak load.

	Plate Volts	*Plate Ma.*	*Screen Volts*	*Bias Volts*
KWM-1 on 21 Mc.	750	40–200	260	60
Using external power:				
KWM-1	820	40–60	250	60
50-Mc. outboard unit	500	30–200	150	40
Using KWM-1 power:				
KWM-1	680	35–55	240	60
50-Mc. outboard unit:	680	40–200	240	60

It can be seen that when the KWM-1 power is used the voltage on the 6146 plates drops to 680 and the screen voltage to 240. In practice this ratio seems to work out well. As this was being written the 50-Mc. s.s.b. unit had been in daily use for some time, with no adverse effects on it or the KWM-1. QST

Strays

Here are the November schedules for the various MARS technical nets.

First Army MARS

(Wednesday evenings 2100 EST, 4030 kc., upper sideband)

Nov. 4 — S.S.B. Exciter Circuits for a New Beam Deflection Tube.
Nov. 11 — Modern Communications Receiver Circuitry.
Nov. 18 — Tubes *vs.* Transistors in R.F. Circuits.
Nov. 25 — Transistorized Gadgets and Gimmicks.

AF-MARS Eastern

(Sundays 1400 EST; 3295, 7540, and 15,715 kc.)

Nov. 1 — Basic X-Rays and Their Applications in Industry.
Nov. 8 — Elements of Radar.
Nov. 15 — Guided Missiles and Propulsion Systems.
Nov. 22 — Elementary Particles.
Nov. 29 — Applications of the Atom.

AF-MARS Western

(Sundays 1400 PST; 3295, 7832.5, and 143,460 kc.)

Nov. 1 — Emergency Communications and Civilian Defense Communications.
Nov. 8 — A Review of Parametric Amplifiers.
Nov. 15 — V.H.F. 2-Way Mobile Communications.
Nov. 22 — Amateur Communications.
Nov. 29 — Net Session and Conversion Information.

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The Employees and Alumni Association of the National Park Service plans to publish a special directory listing all amateurs employed by the U. S. National Park Service, any of the State Park Services and their cooperating agencies.

Jack E. Boucher, W2PJD, wants each such amateur to send him a QSL card prior to December 31, 1959, listing the ham's full name, call, complete QTH, title of employment position, the State or Federal agency and Park or Forest employed in, date of first license, bands operated most frequently and favored frequencies, whether fixed or mobile or both, and a brief description of the station, and class of license. A free copy of the directory will be mailed after publication to each amateur who sends in the requested information prior to the December 31 deadline. Don't forget to add the additional information requested above, and send your cards to W2PJD, Park Service Ham Directory, 25 Jackson Avenue, Northfield, N. J.

• Recent Equipment —

The Johnson Viking 6N2 Converter

A RECENT addition to the v.h.f. equipment line of the E. F. Johnson Company is a two-band crystal-controlled converter of unusual design. Though the basic circuitry follows standard practice, some interesting ideas are employed to achieve bandswitching reception of 50 and 144 Mc. without introducing excessive losses.

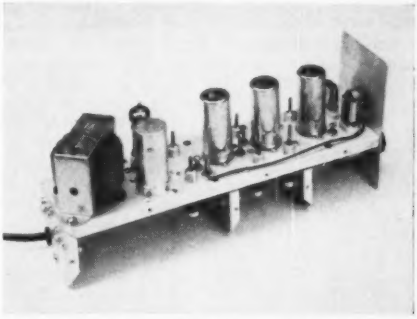
A 6ES8 dual triode in a conventional series cascode r.f amplifier works into the pentode section of a 6U8 mixer. The triode portion of the 6U8 is an untuned i.f. amplifier. Another 6U8 provides the injection. The triode portion is an overtone oscillator. This works alone for the 50-Mc. part of the converter. The pentode section is switched in as a tripler to furnish injection for the 144-Mc. side.

The 50- and 144-Mc. coils in the r.f section are in series. The 50-Mc. coils are shorted out by the band switch when reception on 144 Mc. is wanted. The band switch also has an "off" position which opens the a.c. line to the primary of the power transformer. Phono-type jacks are provided for the antenna and output connections, on the rear of the unit.

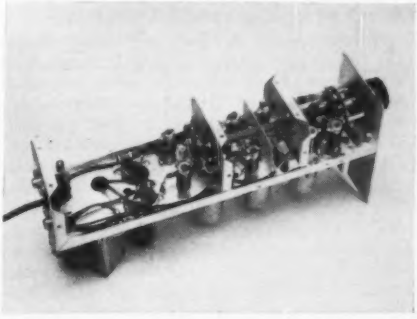
Several features contribute to the rejection of images and other unwanted signals outside the normal signal ranges, and to the reduction of overloading due to strong signals both in and out of the 6- and 2-meter bands. Tuned circuits are used for the r.f. amplifier plate and the mixer grid, for a measure of r.f selectivity. The 50-Mc. r.f. amplifier input circuit uses two slug-adjustment coils, both tuned, with a small capacitor connected between them, in the manner of the input circuit of the *Handbook* 50-Mc. converters of recent years. This feature is omitted in the 144-Mc. input circuit, presumably because it would adversely affect the noise figure. At 50 Mc. the 6ES8 has a far lower noise figure than is needed at this frequency, so some of it can be sacrificed in the interests of better selectivity. A gain control in the 6ES8 first cathode circuit allows reduction of the r.f. gain, to prevent mixer overloading on strong signals.

Four different intermediate frequencies are offered: 26 to 30 Mc., 28 to 30 Mc., 14 to 18 Mc., and 30.5 to 34.5 Mc. The converter supplied to us had provision for 26 to 30 Mc., so a 75A2 was used for testing by the writer. Even with the gain on full, we found no signals strong enough to cause cross-modulation, though the location is one that is devoid of really strong locals. The site is, however, surrounded by f.m. and TV stations on nearby hills, and the level of the signals from these nonamateur sources is extremely high. No spurious signals could be found in the 50-Mc. range, but the f.m. stations produced images in

The shape of the Viking 6N2 Converter is such that it fits nicely between other items of equipment on the operating table.



Interior view of the 6N2 Converter, showing tubes, crystals and power transformer.



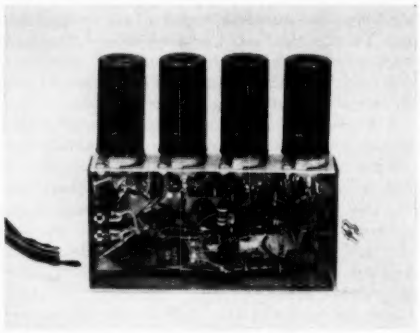
Bottom of the two-band v.h.f. converter. R.f. amplifier components are at the front of the unit.

the 144-Mc. band. They were not overly strong, however, and it is believed that they could be trapped out easily, as this has been found to be necessary (and practical) with other converters used at this location.

The 6N2 Converter cabinet is finished in the chocolate-brown color used on other products of the E. F. Johnson Company. The form factor of the case ($2\frac{3}{4} \times 5 \times 12$ inches) is such that it occupies a minimum of high-priority operating table space. The converter is supplied either in kit form or completely wired. — *E. P. T.*

Collins Noise Blanker

DESIGNED specifically for use with the KWM-1 and KWM-2 transceivers and the 75A-4 and 75S-1 receivers, the Collins Noise Blanker effectively reduces impulse-type noise in the receiver by cutting off the i.f. output during each noise pulse. The blanker operates by converting the noise envelope to a d.c. pulse which is applied to an i.f. stage to reduce the gain for the duration of the noise impulse pulse. In this it resembles the Lamb noise silencer of the mid-30's; however, it differs from the Lamb circuit in several respects, one of them rather basic: in the Lamb silencer the noise was sampled by tapping the receiver's i.f. amplifier ahead of the blanked stage, but the Collins unit samples the noise with a separate 40-Mc. receiver. The successful operation of the circuit is thus dependent on the assumption that there will be noise in the 40-Mc. part of the spectrum that is essentially identical with that in the 3-30-Mc. region. For man-made noises this assumption is probably valid most of the time in most locations.



An inside view of the KWM-1 Noise Blanker. Four dual-purpose tubes and eight diodes are used. This model is attached by its flanges to the inside of the KWM-1 lid. All connections to the KWM-1 are made through the large cable running in from the left.

The block diagram in Fig. 1 shows the circuit functions of the noise blanker. The pentode sections of tubes V_1, V_2 and V_3 are connected in a cascade 40-Mc. broad-band r.f. amplifier. Gain of the second amplifier, V_{2A}, and thus of the 40-Mc. receiver, is controlled by a variable resistor in the cathode circuit. The on-off switch is attached to the control shaft.

Following V_{3A} are two 1N60 diodes. One is used to rectify part of the output of V_{3A}, providing a d.c. voltage (positive) which is applied to the cathode of the same tube for automatic gain control. The second 1N60, CR_1, is a simple diode detector for the noise pulses. After detection, the pulses are clipped by a 1N67A diode, CR_2, and applied to the grid of the first pulse amplifier, V_{3B}. The 1N60 diode, CR_4, between the first and second pulse amplifiers clips the negative side of the pulse before further amplification in V_{2B}. Additional amplification and squaring of the pulse takes place in V_{1B} and CR_3, so that the pulse leaving this circuit is essentially rectangular and has a time duration depending on the noise-pulse amplitudes.

After the pulses are formed and shaped they are introduced into the balanced modulator, CR_5CR_6. The balanced modulator is connected between two amplifiers operating at the variable

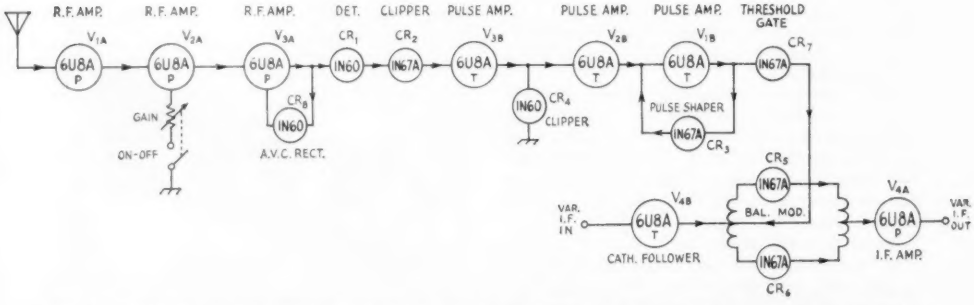


Fig. 1 — Block diagram of the Noise Blanker. The letters in the tube circles indicate whether the pentode (P) or triode (T) section of the tube is used.

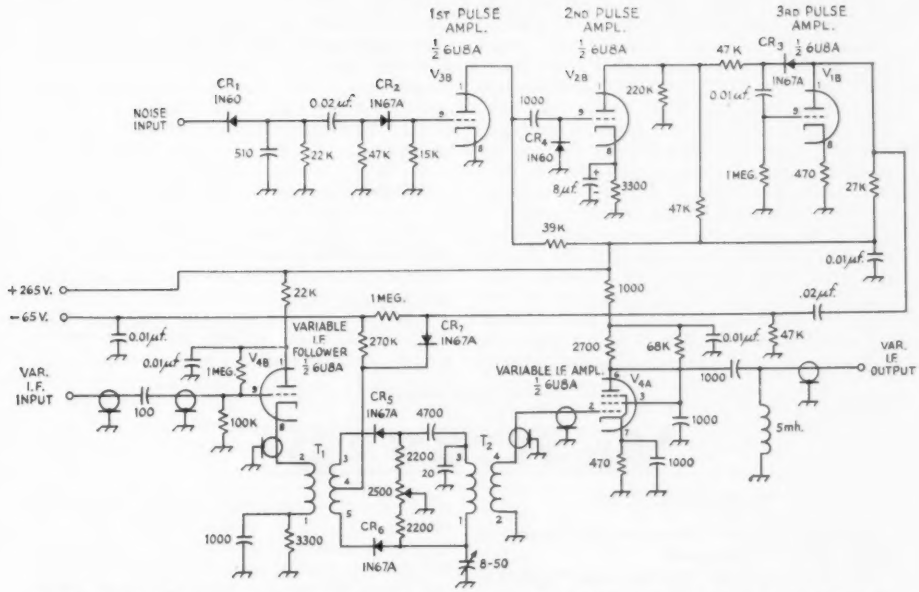


Fig. 2.—Practical details of the pulse-forming and blanking circuit. The r.f. section—shown in block form in Fig. 1—is a straightforward three-stage 40-Mc. r.f. amplifier. Unless otherwise indicated, capacitances are in μμf., resistances are in ohms. Transformers T_1 and T_2 are broad-band i.f. transformers used to couple the 1.5 to 4.0 Mc. variable i.f. signals in and out of the balanced modulator. If the detector CR_1 is coupled into a conventional i.f. circuit and regular i.f. transformers are substituted for T_1 and T_2, the circuit could be usable with fixed-i.f. type receivers. See text for information on the functions of the various stages.

intermediate frequency of the receiver with which the blanker is used. Its two gating diodes are biased so that the receiver operates normally in the absence of impulse noise. Intermediate-frequency signals (1.5-4.0 Mc.) are fed into the balanced modulator circuit through a cathode follower, V_{4B}, and are coupled out of the modulator through a pentode broad-band i.f. amplifier, V_{4A}. In the absence of noise the i.f. signals go through this chain without modification, as the threshold gate diode, CR_7, is back biased and the pulse-forming circuits are thus in effect disconnected from the balanced modulator. However, when noise bursts occur and pulses of sufficient amplitude are formed in the blanker circuits, CR_7 conducts and the pulses go through to the modulator. There the pulses overcome the forward bias on the gating diodes and cut them off, thereby also cutting off the i.f. signal and its superimposed noise for the duration of each pulse. The "holes" in the i.f. signal are of such short duration that they are not apparent to the ear in the receiver's audio output. The balanced modulator circuit is used, rather than a single-ended gain-controlled stage, so that any noise generated by the gating action will cancel itself out in the output circuit.

There are several not too serious limitations in the use of the noise blanker, the obvious one being that noise might possibly appear in the tuning range of the receiver without also being present in the 40-Mc. region. In this case suitable blanking pulses would not be formed. However, most man-made noise does not have a sharp cut-off frequency, so it is unlikely that this condition will often exist. Also, extremely strong i.f. signals in the balanced modulator possibly could be modulated by the gating, thus reducing blanking efficiency. The blanker is provided with an automatic gain control to minimize this modulation effect. The effectiveness of the noise blanker decreases as the pulse rate increases; the limit is around 5000 pulses per second. Noises with higher pulse rates include natural static disturbances and corona noise.

The noise blanker shown in the photograph is a Model 136B-1, designed to go with the KWM-1. It measures $4\frac{11}{16} \times 6\frac{3}{8} \times 1\frac{7}{8}$ inches. Actual installation takes about an hour and a half. This time could probably be shortened if several of the step-by-step instructions were a little clearer. One step involves the connection of three marked coaxial leads from the blanker to the KWM-1 circuitry; however, in the written instructions and in the pictorial diagrams there is no clear indication of where these leads should go. The problem was solved by studying the KWM-1 circuit diagram. For those interested, the lead marked ANT connects to the insulated terminal and solder lug adjacent to relay K_1. The lead VIF IN connects to the 100-μμf. capacitor near T_1, and VIF OUT goes to Pin 7 of KWM-1 tube V_3.

The 136B-1 Noise Blanker is intended for mounting on the inside top cover of the KWM-1 cabinet, with its power cable dressed around components and passing through a hole already provided in the KWM-1 chassis. The cable leads fan out for connection to the receiver circuitry. The combination on-off switch and blanker gain control is mounted on the KWM-1 panel in the position formerly occupied by the dial-light dimmer control. Dial-light intensity is no longer adjustable and is fixed in the "bright" condition.

After the blanker has been installed only one minor adjustment must be made before putting it to use. This is to retune one of the KWM-1 slug-tuned transformers, an operation that requires an alignment tool which is not furnished.

Power for the blanker is taken from the KWM-1. The only external equipment required is a separate 40-Mc. receiving antenna. In the case of a mobile installation, this antenna can be a simple six-foot whip or the car's broadcast receiving antenna. For fixed installations a resonant (at 40 Mc.) quarter-wave coax-fed whip is best. The instruction manual does not mention the fact that one of the coax connectors (marked A_2) on the Cannon plug at the rear of the KWM-1 is the 40-Mc. antenna connection point.

The Noise Blanker package contains all necessary mounting hardware, a wiring harness which is already connected to the blanker, and an 11-page instruction leaflet. Except for the few items mentioned above, the instructions are complete and include a voltage and resistance chart, photographs, pictorial and schematic diagrams. The Noise Blanker is a product of Collins Radio Company, Cedar Rapids, Iowa. — *E. L. C.*

Strays

D–A–N–G–E–R

W6EBK has a story he hopes other hams will read — for their own good.

"I just recently got very interested in RTTY — bought the printer one place and the terminal unit somewhere else. Like all hams, I wanted to make some changes to make switching easier in my shack.

"In 29 years of hamming I, like many others, have had my share of bites and burns from r.f. and electricity. But nothing like this. I only hope this story will inspire someone else to pay attention to little touches of a.c. shock, even 110 v.

"I had used a little quarter-inch drill earlier out in the field with a long extension and found I had a grounded motor case. But I just ignored it, went back to the shack and changed polarity, then finished the job.

"But yesterday, the situation was different. I wanted to add another jack so I could use just one switch to turn on the works. I upended the terminal unit, unplugged to 110 and left the mag. keyboard, output and a.f.s.k. plugs in their respective jacks. Then I started to drill a hole in the rear of the chassis. I was wearing a sports shirt with short sleeves and shoes with crepe rubber soles.

"I picked up the drill motor, got a bear hug around the chassis, positioned the drill (even going over the details now makes me nervous) and squeezed the trigger. The drill never did touch the metal — I was gripped in the a.c. cycle. I couldn't release the trigger as all my muscles were so contracted that I was doubled together.

"Somehow I got away from the chassis. It fell on the floor and even when I was free of it, I was still doubled over. I struggled back and pulled the plug out of the wall — the motor was running with the drill winding into my sports shirt. Fortunately, it did not drill my body. I did get several cuts from rough edges on the chassis and the shock left me weak and exhausted.

"Today, I checked the case of the drill motor and it is grounded to one side of the 110 v. I am now a true believer in a third wire on all power tools, that third wire going to a ground.

"I hope this will be a reminder to all amateurs — I almost became a silent key before I had a chance to use it."

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W1FEQ also wants to warn every ham with a microphone or key that sudden death may be lurking in the shack. His story:

"About two years ago I installed a Bendix TA12 surplus transmitter as a v.f.o. exciting a push-pull 813 final. My metal base Vibroplex key plugs into the cathode jack of the 807 driver in the v.f.o. The power supply for the v.f.o. has a 300-volt pack feeding the oscillator and buffer and a 600-volt pack feeding the driver stage.

"When I installed the plate feed switching arrangement, I had a bright idea. To simplify matters, the high voltage ON and OFF switch was placed in the negative lead from the power supply to the v.f.o. In this manner, one s.p.s.t. switch controls both the 300- and 600-volt feed to the v.f.o.

"Recently while turning my HRO receiver with my left hand, with a finger on the metal dial, my right hand brushed against the metal key base. I received a severe jolt through the arms.

"Investigating the cause of this potential difference, it was apparent this lash-up was lethal. It was only by sheer luck I never grabbed the key sufficiently to become "frozen" with probable electrocution by ventricular fibrillation or respiratory center paralysis.

"*You* may have a similar condition. I urge you to make a voltmeter test for potential difference between your receiver cabinet and your key or

Continued on page 172

Happenings of the Month

Election Results

Geneva Report

Canal Zone Band Changes

ELECTION RESULTS

In the current director elections taking place in the Canadian, Atlantic, Dakota, Delta, Great Lakes, Midwest, Pacific and Southeastern Divisions, four of the incumbent directors have been declared reelected, being unopposed for the office.

Alex Reid, VE2BE, will start his sixteenth term as director of the Canadian Division on January 1, 1960. In the Midwest Division, Robert W. Denniston, WØNWX, will again serve as director. The Pacific Division's Harry Engwicht, W6HC, was also returned to office. James P. Born, W4ZD, remains director of the Southeastern Division.

Charles G. Compton, WØBUO, who has been vice-director of the Dakota Division for the past two years, moves up to the directorship in January. A senior engineer for Minnesota Mining and Manufacturing Company in St. Paul, Minn., WØBUO is a past president of the St. Paul Radio Club and served as treasurer of the 1957 Dakota Division Convention. He has also been active in Civil Defense, having served for two years as radio officer of St. Paul. He holds OBS and ORS appointments.

Sumner H. Foster, WØGQ, vice-director of the Midwest Division and Ronald G. Martin, W6ZF, Pacific Division vice-director, both were unopposed, and therefore declared reelected. The new vice-director of the Delta Division needs no introduction — Victor Canfield, W5BSR, who has served a total of ten years as director of that division.

For the first time, a YL has been elected to a top office in ARRL. Martha JoeAnn Shirley, WØZWL, becomes the vice-director of the Dakota Division the first of the year. Martha is a past president of the Aberdeen Radio Club, and a past secretary of the Black Hills Amateur Radio Club. She serves as Emergency Coordinator for Meade County and also holds an appointment as ORS. Her occupation: being Mrs. WØYQR.

All other offices in the eight divisions are contested, and ballots have been sent to the Full Members. The full text of the Executive Committee meeting's minutes appear at the end of this department.

NEW PHONE BANDS IN THE CANAL ZONE

The 15 and 10 meter phone bands for amateurs in the Canal Zone were expanded, effective October 1, 1959. The new subbands 21,200–21,450 and 28,450–29,700 kc. — were announced recently by the licensing authority for the Canal Zone, Headquarters, Caribbean Command.

REPORT FROM GENEVA

As we write this, the Ordinary Administrative Radio Conference in Geneva has been in session about six weeks. So far, the only actions which have been taken regarding any frequency allocations matters are tentative, and could be influenced by later developments. Thus, it is too early for either excessive optimism or pessimism as to the final outcome of the conference.

Preliminary examinations of most of the spectrum have been completed by the full Committee

(*Continued on page 152*)

At the New England Division Convention in Hartford over Labor Day week end James J. Lamb (left), former technical editor of QST, was presented the 1959 ARRL Merit Award by League President G. L. Dosland, WØTSN (right). The Award was inscribed: "For his contributions to amateur communication techniques, especially in the development of methods for achieving high selectivity and noise reduction in radio reception."

A Glimpse of Russian Amateurs

BY DANA W. ATCHLEY,* W1HKK

According to the State Department, over 15,000 U.S. citizens will have visited the U.S.S.R. before the end of 1959. Predictions are that the number will increase to 40,000 in 1960. Since approximately one out of every 900 U.S. citizens is a licensed radio amateur, it would seem logical that at least 15 hams visited the U.S.S.R. this summer, and if the climate is right, many more will follow. The following article provides a short glimpse of what the U.S. amateur may see of Soviet amateur radio on his visit. It is not an attempt to describe the complete organization of Soviet amateur radio. For this the reader is referred to the able article "Amateur Radio, Russian Style" in the November 1958 issue of QST, by T. M. Hannah.

EVER since the end of World War II, I have had a strong curiosity as to the makeup of Soviet amateur radio, which was particularly heightened by trying to garner new U.S.S.R. countries on phone and s.s.b. In September of this year my business activities scheduled me to visit England and France, so it seemed an excellent time to travel a little farther east (only several hours by jet) and visit the U.S.S.R. Although I was naturally interested in the usual tourist sights, I decided that I would try to pierce the electronic iron curtain at several levels: research, industry and amateur radio. I quickly found out that in the industrial category, at least, such exchange of visits had been primarily carried out on a reciprocal basis under State Department sponsorship. Such visits are quite official and take several months to set up. Hence I decided to apply for an Intourist visa and hope for the best (Intourist is the official Soviet travel agency). The Intourist "high style" tour costs $30 per day for which one gets a very fancy hotel room, four meals, the extensive use of a private car and driver, and a female interpreter. Quite a package!

In order to increase the probability of successful meetings with Soviet electronic and ham personnel, I sent ahead as many letters as possible to pave the path. The ARRL was most helpful and sent out a very official sounding letter to the anonymous but famous post office box N-88 in Moscow.

After two very hectic non-ham type weeks in England and France, I and a close friend, George J. W. Goodman, an editor of *Fortune* on vacation, arrived in the large Moscow airport on Sunday afternoon, Sept. 20. After two hours of great confusion while we cleared various Soviet customs and other checks, we drove about 20 minutes to the famous Soviet skyscraper hotel, the Ukraine. This 26-floor structure is most interesting and packed with people from all over the world. The mixture of rich dowagers from the U.S., swarms of Chinese from the Peoples' Republic, Kazazkhs, Indians and Egyptians was a most unusual sight. After another two-hour wait for rooms, we finally fell dead tired into our beds.

Our first day in Moscow was spent in seeing the usual tourist sights such as Red Square, museums and thousands of icons. By the end of the day we were more than ready to switch back to electronics. Unfortunately no responses to my many letters awaited me at the hotel; hence,

* © Microwave Associates, Inc., Burlington, Mass.

UA3BW, at the left, was a cordial host to author W1HKK.

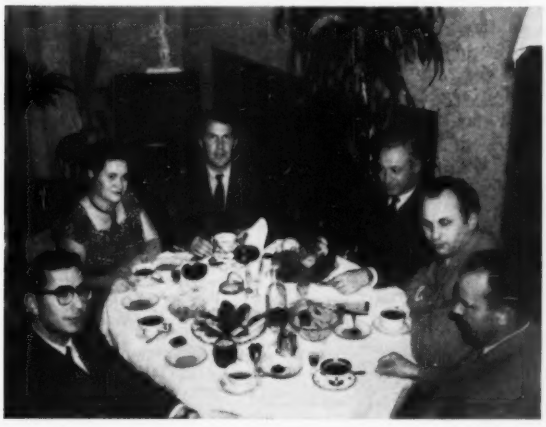
UA3BW's gear is largely home-built, except for the AR-88 receiver.

through various interpreters, it was necessary to look up telephone numbers (no easy task in Moscow) and to make telephonic contact with the people to whom I had written.

I will mention the first electronic (but non-ham) contact only briefly. Dr. Zarem S. Chernov, a top 32-year-old physicist, is considered by many to be the dean of microwave tube design in the U.S.S.R. He heads a research group in the Institute of Radio and Electronics in Moscow and has made two trips to the U.S.A. He entertained me and Goodman most royally with a 300-ruble (equivalent to about $30) dinner in a private dining room of the Prague restaurant (Moscow's answer to N. Y.'s 21 Club). To ease the language difficulties he provided a gorgeous girl interpreter named Olga. The next day he spent all afternoon showing me his laboratory and his new tube designs. I had the feeling that he was most open in his discussions. He has invented three novel microwave tubes. One is called the Spiratron and is a traveling-wave amplifier using a new type of electrostatic focusing system and providing very efficient amplification as high as 10,000 Mc. The second tube, called the anti-klystron, is a tube that performs the functions of a klystron but which does not require the use of microwave cavities. The third tube was a traveling-wave tube in which the electron beam interacts with an ionized sheath of gas plasma rather than the conventional helix. This technique may provide for amplification and generation of millimeter waves. In exchange for this tube information I introduced Chernov and his group to some disturbing capitalistic concepts concerning my company, Microwave Associates Inc. — such as stock options and the fact that with 500 employees there are over 400 cars.

After this first rather warm reception, I attempted to arrange some visits to Soviet electronics plants. Here I met with a polite but firm "Nyet". The excuse given, however, was rather American in form. They stated that since it was the end of the Soviet production quarter, my visit would be disturbing and hinder shipments and

(*Continued on page 164*)



From left to right around the table are George Goodman, of *Fortune;* Mrs. Shadsky (UA3BW's mother); author W1HKK; T. Alexander of the Central Radio Club; V. Ivanetsky, editor of *Radio;* and T. Karpushenko, vice-president for sports activities of the Central Radio Club.

After 28 Years

Circle Completed

A MAN with a great dream, a creaky old submarine and a radio ham . . . they came together 28 years ago and that's how the story began.

The man with the dream was the great Arctic explorer, Sir Hubert Wilkins. Born in Australia in 1888, he traveled across the polar wastes on foot when he was 25 and fifteen years later commanded the first airplane to cross the Arctic.

But Sir Hubert was convinced that the only way to open the Arctic was to travel *under* it. He was sure that submarines could glide beneath the frozen Arctic sea, untroubled by the fog, howling winds and ice storms that lashed the surface.

The submarine was the *Nautilus*, a shabby World War I sub, leased by Sir Hubert from the U. S. Navy for one dollar a year and the promise that he would sink her 200 fathoms deep when his scientific research project was finished.

The radio ham was Ray Meyers, W6MLZ, now ARRL director of the Southwestern Division. Meyers, an old Navy man who had served on the *Nautilus*, was radio officer for Sir Hubert.

In 1931, Sir Hubert planned to take the *Nautilus* under the North Pole. The old sub was refitted with a special collapsible prow bumper to fend off submerged ice and an unusually high superstructure to help her break her way up through solid sea ice for breathers on her journey.

But she never made it. She was plagued with one breakdown after another and finally her diving planes failed entirely. Sir Hubert was forced to give it up — just as the scoffing experts had predicted.

The *Nautilus* was scuttled and sunk fathoms deep in the cold crystal waters of a Norwegian fjord.

Sir Hubert, most of his funds gone, eventually came back to the United States and continued his work on the Arctic. He was working on rations for polar exploring groups when he died in December, 1958.

But before Sir Hubert died, he saw his dream come true. On Aug. 3, 1958, 27 years after his own project ended in failure, the new *Nautilus* — the world's first atomic-powered submarine — glided

(*Continued on page 170*)

Notice . . .

Notes on the transmitter which may cause you trouble. Key contacts bad shape, upper contacts loose. Causes noise like snow static in receiver when breaking down. Antenna transfer switch—frequently fails to close on RECEIVE side. Adjust spring—not too much otherwise TRANSMIT position will cause bad AC hum and sparking when sending. Plate current should never exceed .5 amps or fuse will go. If fuses keep going, look for loose connection on either the antenna load coil or the coupling coil. Make sure switch on modulator is on CW position and the local remote switch is in center position, otherwise you will ruin the 849 tubes. If blue glow appears in either of these tubes, look for a broken down resistance in modulator unit. When shifting to 18, 23 or 27 meters, grid connection on oscillator should be on first turn from bottom of coil; on all waves above 30 meters, it goes on the 2nd turn. Note: this is contrary to the instruction but the only way you can get a clear note.

73 old transmitter. You served me well considering your power and I hate to leave you. You seem like an old friend.

Anyone desiring any information concerning the outfit, write to me in Rosyln, Pa., USA or send a note to the RCA station WSC and ask them to get in touch with me.

Ray Meyers

Paul Weirick, K6AK, left, returns the note Ray Meyers, W6MLZ, placed in the *Nautilus* rig 28 years ago. Ray is holding a picture of the old submarine.

Recruiting More Hams

Here's how one club started some young people on an electronic career, improved public relations with radio amateurs, enlarged civil defense staffs and ended up with a larger club membership.

BY ROBERT McCOY,* K9DZF

THIS all came about during one of our SWANI (Southern Wisconsin and Northern Illinois) club meetings while conducting business in our usual time-wasting way. It was brought to our attention that when one of our new teen-age members wanted to become a ham, he had a difficult time finding out what amateur radio was all about. He visited several libraries for information and all he could find were technical books on radio theory. Finally he located an amateur in his neighborhood and then he was in. After he got his license his school buddies looked on him as a Marconi or Edison and wouldn't believe that they could go the same.

We decided that if we could supply a book to each of the public and high school libraries in our area, explaining amateur radio, its equipment and many facets of operation, we would be giving the interested a helping hand. This we did and in addition, on the inside of the front cover of the books, we listed the names, and phone numbers of the amateurs in the local communities. We invited the reader to call or visit these stations and told them the amateurs would be glad to furnish any additional information desired.

We had tremendous coverage with photographs and articles by all the area newspapers and radio stations and the public here is now thinking more in terms of the training of young electronic specialists for the space age instead of taking for granted that every little blip on their TV is caused by some ham.

The phone calls started to come in and we decided that the most efficient way to handle this was to have an evening school. We ran a small article on this in the local papers and within three weeks we had 80 enrolled. When we gave one of the books to the superintendent of the local high school he offered us a classroom and any aids he might have, all without charge. We were using one of the larger physics rooms for our class, but the class got so big we had to take over the cafeteria. There are several high school students, telephone and power company employees, a product design and a mechanical engineer, watchmaker, store clerks, lab technician, tool makers, a housewife, and a retired physician.

There was a $10.00 charge for the course. This covers the cost of the text which the student keeps and some supplies. W9OBY volunteered as instructor, assisted by K9HKJ and K9DZF.

The course ended in June with 40 attending. This we consider a very good average for an adult evening course with so many competing activities. Twelve have already gotten their amateur licenses, several more are studying and the balance just took the course as an aid to their work or they had an interest in electronics. We are planning an advanced course this fall. For fun, therapy, disaster aid, electronic research, or a career for someone, we are satisfied that a little book in the hands of the interested can open a new door for them and this is very gratifying to us. QST

* Woodstock, Illinois.

This pamphlet has been donated to your library by the Southern Wisconsin and Northern Illinois Amateur Radio Club (SWANI) in order to acquaint you with one of the world's most interesting and rewarding hobbies. It is the hope of the SWANI club, and the almost 200,000 amateurs throughout the world, that the information contained herein will provide a stepping-stone for you in entering the electronics field, not only as an avocation but as a vocation as well.

The amateurs listed below reside in your community and are SWANI members. If you have any questions concerning this hobby, or if you would like to visit an amateur station in operation, feel free to contact any of them.

NAME	CALL LETTERS	PHONE

The SWANI Club meets on the last Monday of each month in their club rooms on the third floor of 20 North Ayer Street in Harvard, Illinois. Guests are always welcome at our meetings.

Hints and Kinks For the Experimenter

TWO-TONE TEST WITH THE 32S-1

When an s.s.b. exciter is followed up by a home-built or commercial linear amplifier, it is-a good idea to check the operation of the amplifier with a two-tone test, a check essential for determining proper amplifier bias and loading. However, with filter rigs such as the 32S-1, a two-tone test becomes rather involved since there is no provision in the equipment for permitting any appreciable carrier insertion. In order to make a two-tone test with these transmitters, two audio oscillators are required. They must be properly mixed with little interaction. Since the 32S-1 already has a tone oscillator a simple connection can be made so that only one external audio oscillator is needed for the test. Items required are a 100-ohm resistor and a shorting plug that will mate with the SPARE jack on the 32S-1. Fig. 1 shows where the resistor is inserted

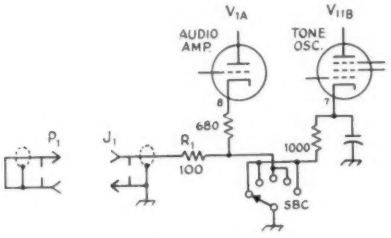


Fig. 1—Diagram showing connections to the 32S-1 for making the two-tone test.
J_1—"Spare" jack on 32S-1 transmitter.
P_1—Shorted plug to mate with J_1
R_1—100-ohm ½-watt resistor.

in the circuit. Actually, the resistor R_1 could be disregarded but was used in this case to keep the plate resistance of V_{1A} as high as possible so that the internal audio oscillator would not be loaded too heavily.

To make the two-tone test, turn the EMISSION switch to LOCK KEY and turn up the MIC GAIN enough to produce an indication on the oscilloscope. Now insert the shorting plug P_1 into the SPARE jack J_1. Connect an external audio oscillator (set to about 1000 cycles) into the MIC jack of the transmitter and increase the gain of the external oscillator until a two-tone test pattern with good crossover nulls appears. Leave the external oscillator gain at this setting and make all further adjustments with the MIC GAIN control. The two-tone test frequency will be approximately 400 cycles.

Since the cathode of V_1 is grounded some distance from the tube there may be a small trace of 60-cycle ripple present on top of the two-tone pattern. If the ripple is annoying, change the external oscillator frequency slightly so as to change the beat frequency between the two-tone difference and 60 cycles.

— *N. C. Starrou, W4MXL*

REASSEMBLING THE HQ-110 AND HQ-170

Owners of the Hammarlund HQ-110 and HQ-170 no doubt have found it difficult to replace the cabinets on the chassis on models equipped with clocks. The trouble arises because the clock adjustment shaft must pass through a hole in the rear wall of the cabinet. If a 6- to 8-inch piece of spaghetti is placed over the clock adjustment shaft before the cabinet is replaced, the spaghetti can be easily guided through the cabinet hole. After the cabinet is on, remove the spaghetti and install the knob provided for the clock shaft.

— *Clifton H. Falls, K8JIC*

ANOTHER CRYSTAL GRINDING COMPOUND

It is easy to overshoot the desired frequency when grinding crystals for v.h.f. use because the fundamental frequency is multiplied several times. In these cases a slow grinding compound is essential.

I use Sunbeam Shavemaster Self-Sharpening compound for the final grinding of a crystal. This substance is extremely fine in texture and it requires a great deal of elbow grease to move the crystal a few kilocycles.

— *Kim A. Boriskin, K2MGS*

CRYSTAL PULLER

Amateurs who use Johnson Viking transmitters such as the Ranger or Valiant will find that a small piece of electrical tape attached to the

Fig. 2—Crystal remover made from electrical tape.

crystals to form a small tab (Fig. 2) will aid in removing the crystals from their housing.

— *Dick Minnick, K8KCO*

FOURTEEN MARS FREQUENCIES WITH THE HEATHKIT V.F.O.

HERE is a simple modification to the Heathkit v.f.o. which makes possible fourteen MARS frequencies, plus the usual 80- through 10-meter frequencies. A 3-position rotary switch, two capacitors and a few miscellaneous parts are the only items required. Fig. 3A shows the unmodified low-frequency circuit of the v.f.o., and Fig. 3B shows the finished modified circuit.

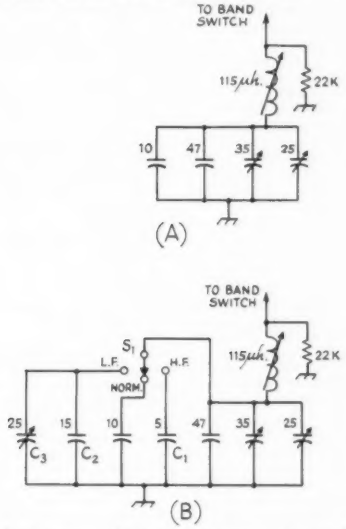


Fig. 3—Diagram of the low-frequency circuit of the Heathkit v.f.o. before modification (A) and after modification (B).

C_1—5-μμf. silver mica capacitor.
C_2—15-μμf. silver mica capacitor.
C_3—11-meter trimmer.
S_1—One-pole three-position rotary switch.

To make the conversion first drill a hole large enough to receive a panel shaft bearing in the upper right-hand corner of the panel. When mounting the bearing, be sure to place it so that it clears the v.f.o. calibration disk and green plastic shade. From a piece of scrap aluminum, form a bracket to support the rotary switch S_1 and position it directly behind the low-frequency trimmer capacitor. Attach the rotary switch S_1 to the bracket so that its shaft is in line and faces the panel shaft bearing. Connect the switch shaft to the panel bearing with a flexible shaft. Referring to Pictorial 2 in the Heathkit v.f.o. manual, place a solder lug on the screw holding the panel light "K." Connect a heavy tinned lead from the ungrounded terminal of the low-frequency trimmer capacitor to the "arm" of switch S_1 and solder. Now disconnect the 10-μμf. capacitor (see Heathkit manual, Pictorial 1) leaving the 47-μμf. capacitor intact. Connect the 10-μμf. capacitor and a 5-μμf. capacitor, C_1, as shown in Fig. 3B. Now connect a 15-μμf. capacitor, C_2, from the switch to ground. Use the solder lug on panel light "K" as a tie point for the above ground connections. Disconnect the wire going from the 11-meter padder to S_8 (Heathkit manual, Pictorial 3) and connect a lead from the padder to the rotary switch S_1, as shown in Fig. 3. Run this lead from the capacitor through grommet E_4 (Heathkit manual, Pictorial 3) up to the switch. This completes the wiring.

Place switch S_1 in the "normal" position, and turn on the v.f.o. Go through the calibration procedure described in the Heathkit manual for the 160- and 80-meter bands. Now switch to the "low-frequency" position and set the v.f.o. dial at 4 Mc. Tune the station receiver to 1.76 Mc., and adjust the old 11-meter capacitor (C_3 in Fig. 3B), to zero beat the v.f.o. with the receiver. Turn the switch S_1 to the high-frequency position. The v.f.o. should tune 3.6 to 4.1 Mc. in this position.

The v.f.o. now covers a fundamental range of 1.6 to 2.05 Mc. in three steps: Low frequency 1.6 to 1.76 Mc., normal 1.75 to 2.0 Mc., and high frequency 1.78 to 2.05 Mc. The second harmonic of the low-frequency range covers the MARS frequencies 3237, 3245, 3275, 3289 and 3347 kc. The second harmonic of the high-frequency range covers 4020 and 4025 kc. The third harmonic of the low-frequency range covers 4820 kc. The third harmonic of the normal range gives 5302.5 and 5760 kc., while 6997.5, 14,405, 20,994 and 27,994 kc. can all be covered with the v.f.o. in the 40-meter position.

— *William Holliday, W4DKL*

DX-100 AUDIO CIRCUIT CHANGE

AFTER receiving several reports of insufficient audio on my DX-100 transmitter, I enlisted the aid of a fellow ham who had modulation-percentage measuring equipment. His scope showed that the DX-100 was modulating less than 60 per cent. Increasing the gain or raising my voice beyond comfortable level only caused distortion and splatter.

To rectify the situation, I merely replaced the two 510-μμf. coupling capacitors in the preamplifier stages of the modulator with .05-μf. units.[1] Since the chassis is fairly crowded in this section of the transmitter, it was easier to insert the .05 μf. capacitors in parallel with the 510-μμf. units. One of the 510-μμf. capacitors is connected between Pins 6 and 2 of the 12AX7 speech preamplifier and a .5-megohm potentiometer. The other 510 μμf. capacitor is connected from Pin 1 of the 12AX7 to Pin 2 of the 12BY7 audio driver.

After making this modification my modulation percentage was averaging 60 per cent with peaks up to 95 per cent.

One other DX-100 note: It is advisable to replace the .02-μf. 1600-volt capacitor across the modulation transformer with one that has a 3000-volt rating. Many DX-100 owners have experienced difficulty with the 1600-volt unit breaking down. — *Gary L. Foskett, W1ECH*

[1] The 510-μμf. capacitors are used in the DX-100 to reduce low-frequency response (see *Handbook* chapter on speech equipment). Replacing the 510 μμf. capacitors with .05 μf. units will restore the low-frequency response of the preamplifier. — ED.

Announcing the 26th ARRL Sweepstakes

November 7–8 and 14–15

CONTEST PERIODS

Time	*Start*	*End*
	Nov. 7 & 14	Nov. 9 & 16
EST	6:00 P.M.	3:01 A.M.
CST	5:00 P.M.	2:01 A.M.
MST	4:00 P.M.	1:01 A.M.
PST	3:00 P.M.	12:01 A.M.

You say you couldn't work any DX in the DX Contest; your six-meter beam blew over in the VHF Party; your generator blew up Field Day; your appointment expired the day before the CD Party; a mutt ran away with all your choice steaks during Field Day; a kilowatt just moved into your block; your neighbor lighted a cigar with your license; your landlord has TVI, and your mother-in-law just got her ticket? Is that what's troubling you, friend? *Well, lift your head up high,* for you'll show the world, you'll show the whole world during Sweepstakes that you're not licked — yet!

During Sweepstakes! Ye, gads. QRX one; I've got to warn my break-up, prepare the hole in my speaker, plug up the bug, fix some scrap paper, repair my Operating Aid Number 6's, swipe the beam, feed the wife, oil the cat . . . Oh, brother I'm getting so excited and flustered. Just give me the details, please.

The rules are no different from last year. Forty hours is the maximum allowable total operating time for each entry, with the contest spread over two weekends. Take part on both c.w. and phone if your heart so desires, but the contest is considered separate so separate logs must be submitted for each mode.

Certificates will be awarded to the top c.w. and phone scorer in each of the 73 ARRL Sections. Single-operator stations also may compete for certificates given to a club's top scorer on both phone and c.w. The clubs will again this year be vying for a cocobolo gavel, engraved with the name of the winning club, the group with the highest aggregate score. Technicians and Novices can gain honors, with a certificate going to the top Novice and Technician from each section with at least three valid entries for that particular class license.

How do you get in on the frolic? Just call CQ SS or answer such a call, exchange preambles in the form shown on the facing page and keep a neat, accurate log. Contest forms are available from ARRL on request, or you may draft your entry in accordance with the sample. If you really expect to rack in the contest, specify how many log sheets you'll need. Otherwise those not specifying quantity will receive three, good for 210 contacts.

For purposes of this contest, all VE8s may be considered attached to Yukon; also, VOs as Maritime and Cuba as West Indies.

Check the rules below for specifics; then stand by for action in the 1959 Sweepstakes. Now let's see; I've got to calibrate my pencils, sharpen the clock, wind up my job, bury my socks, wash the garbage, drop the v.f.o. . . .

Rules

1) *Eligibility:* The contest is open to all radio amateurs in (or officially attached to) sections listed on page 6 of this issue of *QST*.

2) *Time:* All contacts must be made during the contest periods indicated elsewhere in this announcement and between amateurs in (or officially attached to) the 73 sections. Time may be divided between week ends as desired, but a total of 40 hours must not be exceeded for each entry. Time spent in listening counts as operating time.

3) *QSO:* Contacts must include certain information sent in the form of a standard message preamble, as shown in the example. C.w. stations work only c.w. stations and phone stations only other phones. Valid points can be scored by contacting stations not working in the contest, upon acceptance of your preamble and/or receipt of a preamble.

4) *Scoring:* Each preamble sent and acknowledged counts one point. Each preamble received counts one point. Only two points can be earned by contacting any one station, regardless of the frequency band. The total number of ARRL sections (see p. 6) worked during the contest is the "section multiplier." It is not necessary for preambles to be sent both ways before a contact may count, but one must be received, or sent and acknowledged, before credit is claimed for either point(s) or multiplier. Apply a "power multiplier" of 1.25 to c.w. entries and 1.5 to phone entries if the input power to the transmitter output stage is 150 watts or less at all times during contest operation.

The final score equals the total "points" × the "sections multiplier" × the "power multiplier."

5) *Reporting:* Contest must be reported as shown in the sample form. Printed contest forms will be sent free on request. Indicate starting and ending times for each period on the air. All Sweepstakes reports become the property of ARRL and none can be returned.

There are no objections to one's obtaining assistance from logging, "spotting" or relief operators, but their use places the entrant in the multiple-operator class, and it must be so reported.

A single-operator station is one manned by an individual amateur who receives no assistance from other persons during the contest periods. He may not have assistance in any manner in keeping the station log and records, or in spotting stations during a contest period. The operation of two or more transmitters simultaneously is not allowed. Contest reports must be postmarked no later than December 3, 1959, to insure eligibility for *QST* listing and awards.

6) *Awards:* Certificates will be awarded to the highest c.w. scorer and to the highest phone scorer in each ARRL section. A c.w. certificate will also be awarded to the highest

HOW TO SCORE

Each preamble sent and acknowledged counts one point.

Each preamble received counts one point.

Only two points can be earned by contacting any one station, regardless of the frequency band used.

For final score: Multiply totaled points by the number of *different* ARRL sections worked; that is, the number in which at least one bona fide SS point has been made. Multiply c.w. scores by 1.25 and phone scores by 1.5 if you used 150-watts-or-less transmitter input *at all times* during the contest.

EXPLANATION OF "SS" CONTEST EXCHANGES

Send Like a Standard Msg. Preamble, the.....	*NR*	*Call*	*CK*	*Place*	*Time*	*Date*
Exchanges	Contest serial numbers, 1, 2, 3, etc., for each station worked	Send your own call	CK (RST report of station worked)	Your ARRL section	Send time of transmitting this NR	Send date of QSO
Sample	NR 1	W1AW	589	CONN	1812	NOV 8

scoring Novice or Technician in each section where at least three such licensees submit c.w. logs; similarly, a phone certificate will be earned by a Novice or Technician in each section where a total of three such licensees submit phone logs. Only single-operator stations are eligible for certificate awards. Multiple-operator scores will receive separate *QST* listing in the final results.

A gavel will be awarded to the highest club entry. The aggregate scores of phone and c.w. reported by club secretaries and confirmed by the receipt at ARRL of contest logs constitute a club entry. Segregate club entries into phone and c.w. totals. Both single- and multiple-operator scores may be counted, but only the score of a bona fide club member, operating a station in local club territory, may be included in club entries.

The highest single-operator c.w. score and the highest single-operator phone score in any club entry will be rewarded with a "club" certificate where at least three single-operator phone and/or three single-operator c.w. scores are submitted.

7) *Disqualification:* Failure to comply with the contest rules or FCC regulations or the necessity for avoiding interference with channels handling amateur emergency communication shall constitute grounds for disqualifications. In all cases of question, the decisions of the ARRL Contest Committee are final.

Sample of report form that must be used by contestants

LOG, 26th A.R.R.L. SWEEPSTAKES

Station..... *C.W. or Phone*..... *Section*.....

Freq. Band (Mc.)	*Time On or Off Air*	*Sent (1 point)*				*Time*	*Date (Nov.)*	*Received (1 point)*				*Time*	*Date (Nov.)*	*Number of Each Different New Section as Worked*	Points
		NR	*Stn.*	*CK-RST*	*Section*			*NR*	*Stn.*	*CK-RST*	*Section*				
3.5	On 1810	1	W1AW	589	Conn.	1812	7	7	W3JNQ	589	E. Pa.	1814	8	1	2
"	"	2	"	589	"	1815	"	6	W4KFC	599	Va.	1817	"	2	2
"	"	3	"	579	"	1820	"	6	W1BIH	579	Conn.	1821	"	3	2
7	"							24	K5LNN	479	Ark.	2005	"	4	1
"	"	4	"	479	"	2115	"	38	W1DZV	579	W. Mass.	1815	"	5	2
"	"	5	"	579	"	2128	"	45	K6OPI	479	S. F.	1820	"	6	2
"	"	6	"	589	"	2133	"	9	W3ALB	589	E. Pa.	2134	"	..	2
"	Off 2135 Time: 3 hrs. 25 min.														
	On 1845														
14	"	7	"	569	"	1915	8	94	KH6IJ	569	Hawaii	1418	9	7	2
"	"	8	"	569	"	1925	"	127	W7HAH	569	Mont.	1728	"	8	2
"	"	9	"	469	"	1935	"	114	W7TML	569	Ore.	1630	"	9	2
3.5	"	10	"	579	"	2110	"	130	K0CNC	579	N. D.	2005	"	10	2
"	"	11	"	589	"	2112	"		K5LNN		Ark.				1
"	Off 2115 Time: 2 hrs. 30 min.														

Total Operating Time: 5 hrs. 55 min. 3.5, 7 and 14 Mc. used. 10 Sec., 22 Pts.
145 Watts Maximum Power Input

Assisting person(s), name(s) and call(s).....

Claimed score: 22 points × 10 sections = 220 × 1.25 (145 watts input) = 275

Type transmitter (tube line-up if home-built).....

Receiver..... Antennas.....

Participation for Club Award in the.....
(Name of Club)

I have observed all competition rules as well as all regulations established for amateur radio in my country. My report is correct and true to the best of my knowledge.

Signature.....

Number different stations worked..... Address.....

YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

FIELD DAY

Our YL Field Day reports this year are not as extensive as anticipated, but the gals who did participate in the June 27–28 doings scored the usual good time.

PARKA YLs made W stations happy with Alaskan YL contacts. KL7s ALZ, BJD, and BLL operated, with several other club members serving as aides and cooks. . . . W6QMO was again a mainstay of operations of the San Francisco RC. Jeri accounted for many of the club's 1066 contacts. . . . K1IZT, Blanche, and W1ZEN, Onie, worked 75 phone as W1GLA/1 with the Framingham, Mass. RC. . . . W2EEO, Madeline, and OM W2CYK invited the New York City RC to their summer shack at Wading River, Long Island, for the big weekend. . . . Bettering their last year's score by 166 QSOs, (559 in 1958, 725 in 1959) the GAYLARKs of Texas had eight operators keeping three stations in continuous operation. Only six states were lacking for 50 state WAS. Congenial OMs did all of the cooking for the second year. . . . Down Florida way K4RNS, Marge, operated and W4IUR, Mim, logged at Daytona Beach ARA's station K4PFN set up on Ormond Beach. W4KOH, Ernestine, helped with operations at the Key West Club, and K4LPV, Irene, labored in the cook shack for the Lake ARA. . . . Other gals heard calling "CQ FD" included W7s HHH and HPT, K8s BPQ and JKP, W8s GSH and VRN.

COMING YL GET-TOGETHERS

Women Radio Operators of New England — Annual Fall luncheon-meeting Nov. 7 at Towne Lyne House, Route 1, Lynnfield, Mass. Contact K1IZT, W1TUD, or W1HOY.

Midwest YL Convention — The tenth annual will be held in Indianapolis, Ind. May 20–21, 1960. Pre-registration is $2.00. W9RTH is chairman; K9IXD, co-chairman.

YLRL International Convention — June 17–19, 1960, at the Hotel Commander near Boston, Mass. Registration for YLs will be $10.00; for OMs, $5.00. Reservations for hotel rooms must be made before May 1, 1960. WRONE is hostess club. Co-chairmen are W1ZEN and W1SVN.

CONTEST

YLRL Anniversary Party

Nov. 11–12 Phone
Nov. 18–19 C.W.

Rules in last month's column

YLRL Election Results

Congratulations to the following new officers of the Young Ladies Radio League who have been elected to serve for a one year term, commencing Jan. 1, 1960:

President — Gladys Eastman, W6DXI
Vice President — Lillian Beebe, W5EGD
Secretary — Connie Hauck, K6EXQ
Treasurer — Jean Kincheloe, K6OQD

District Chairmen: Mary Hadley, K1ADY; Bonnie Grant, K2DKL; Miriam Blackburn, W3UUG; Dorothy Saunders, W4UF; Harriet Woehst, K5BJU; Jan O'Brien, K6HHD; Betty Hartzig, W7CPV; Doris Singer, K9IXD; Norma Gray, W0SZH; Marge Reich, KL7BLL. Chairmen for the eighth, VE, and KH6 districts to be appointed. Wanda Gluck, K6ENK, will continue as Editor of *HARMONICS*.

Net Changes

Corrections and additions to the YLRL Nets and Round Tables listing in the September column

The Ironing Board net, Wednesday, 0900 PST on 3915 kc. no longer functions. The Thursday net on 7215 kc. at 0900 EST is known as the "Friendly Forty" net. W3UUG is NCS. The "Chirps" net (Camellia Capital YL club) meets Thursday at 2000 PST on 3915 kc. K6HHD is NCS.

K4RNS has submitted the following schedule for the Floridora YLs. This information replaces previous listings. The phone net meets Monday at 0900 EST on 7225 kc. with K4IFF net manager. The C.W. novice net meets Friday at 1330 EST on 7185 kc. with KN4ANR manager. The club's six meter net will meet Thursday at 2000 EST on 50.160 mc. K4PPX manager. A "Business Gals" net is planned with K4BAL as manager.

* YL Editor, *QST:* Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.

Doris Anderson, K5BNQ, and her Field Day assistant, Miss Angus Bovine. Doris and "Angie" were the only YL operators with the Oil Capital Mobile Club at W5ATB's farm near Tulsa, Oklahoma. Sharing barns with prize Angus cattle, the club set up three stations and made hay with a total of 350 contacts. *(photo by W5IWL)*

Lynn Stedman, K9IWR, operated FD on 20 c.w. right in her own back yard. The West Suburban (Ill.) YMCA AR Council set up three stations on Lynn's home grounds and used the call K9IND/9 on 6, 20, and 40.

YLs You May Have Worked

K5BJU has appeared before in this column but the photos have never done her full justice. Rather than let a charming picture like this go unused we'll let Harriett Woehst's many ham friends the world over enjoy another view. The vivacious and talented YL from Houston, Texas, is one of the most active hams around, on s.s.b. mainly.

If you would like a contact with the Western Pacific area, KG6AIA, Jan Cox, of Guam in the Marianas Islands will be happy to arrange a sked. For twenty meter s.s.b. Jan and her OM, W5OXJ/KG6, use a 10B driving a pair of 813s to about 700 watts with a cubical quad. During the winter months they switch to ten meters a.m. with 500 watts and a four-element beam.

W1HAG is added to the list of YLs who have amateur Extra Class licenses. A junior at the University of Maine, Sandy Burke credits her major in physics and math directly to her interest in ham radio. Sandy's vacation operating is done on 15 and 40 meters c.w. with an ARC-5 v.f.o. to an ATL or a 75 watt HB.

For working amateurs in 50 of the 56 counties of Ontario, Millie Simson, VE3EII, of Reddindale, Ont., received Worked Ontario Counties 50 certificate No. 1. Issued by the Metro ARC of Toronto, the award is available to all amateurs of the world.

If a photo made Marilyn Monroe famous, we predict at least a pile-up on 20 meters hereafter when beauteous Russian YL UA3CU brasspounds from her Moscow QTH. Elena apparently puts her 40 watt, v.f.o. rig on 14 Mc. c.w. regularly and is happy to work DX stations. OMs are regretfully advised that UA3CU is Mrs. Shubnikova, XYL of UA3BR. *(Photo courtesy W8IV and W9BRD)*

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

WHILE our ears are still ringing from the September V.H.F. Party is a good time to take stock and see if we can learn something from the week end workout. As always, the concentrated activity was a lot of fun, but contests should be more than that. Contest heat can show up klinkers in a station setup, for sure. Makeshift arrangements that do well enough in casual operation come apart completely when we push for maximum speed and effectiveness. The alert amateur will come out of a contest weekend a better operator, too.

Correcting technical deficiencies in our station may not always be practical, but better operating procedure requires only thought and practice. We are not getting our money's worth out of a contest if we don't make some progress in this department every time.

Anyone who has worked a few v.h.f. contests knows all too well that operating skill is a rare commodity in the world above 50 Mc. With rules as simple as in the June and September ARRL V.H.F. Parties it should be no trick at all to make 50 contacts per hour. Only the station calls and names of the ARRL Sections need be exchanged. Even if you add signal reports and a few pleasantries, 30 QSOs per hour should be a leisurely gait. Such a speed won't win you a top spot in any lower-frequency contest, yet it is almost impossible to achieve in a v.h.f. affair. At W1HDQ we made 46 contacts in the first three hours of the party, when there were hundreds of stations to work. Why so slow? Inept operating practices; nothing more.

Maybe you're not interested in contests. Perhaps you wish they'd never been invented. You're entitled to your opinion, and you'll not be alone. But in a sense a contest is only a speeded-up version of general hamming. There are right and wrong ways to do either. More efficient procedure could make all kinds of v.h.f. communication more pleasant and productive. (There is room for improvement on lower bands, too, but we are not concerned with them here.)

Communication is an exchange of information. Calling and signing procedures are necessary preliminaries to this exchange. Why not get them out of the way in the quickest and most efficient manner? While there is no reason to make amateur procedures entirely standard in form, we must conform to certain basic rules if we are to be both legal and efficient in our operating. Let's look at the legal aspects first.

Perhaps one of the most common errors of commission in amateur voice operating is the misuse of phonetic identification. Phonetics are not substitutes for calls. Using them as such is both illegal and confusing.

Then there is the question of portable or mobile status. More often than not, September contest portables we heard were defining their status incorrectly. We heard several using the term "fixed-portable," for example. There is no such thing. The term was invented by amateurs to designate a station operating from a new home location, before license modification has been obtained. It has never been required, and when applied to Field Day or contest stations it is excess baggage, and misleading to boot.

Read the FCC Rules for the Amateur Service and you'll see that the old "portable-one" saw is also incorrect. There is no objection to giving the call area, but it is not required. What *is* called for, but often omitted, is the location of the station. "W1SPX, portable on Mt. Equinox, Vermont" is the right way to sign. "W1SPX portable-one, Vermont Section" is not enough.

Occasionally we heard something about "portable-mobile" over the contest week end. There never was any such thing, and there is no operating need for the term. A station capable of being driven away is a "mobile" whether it is moving at the moment or not. If it is hitched to the countryside in any way it is a "portable." There is no reason, legal or otherwise, to combine the two words.

There are good reasons for the legal requirements. They were put into the amateur rules so that monitors would know readily who is working whom, where, and under what conditions. Thus they serve contest needs admirably as well.

Proper and restrained use of phonetics is almost a must for fast contest exchanges. Standard word lists help. ARRL has a good one, born of long consideration of *amateur* needs. You don't have to use it, or any other, but let's be sensible, at least. Maybe it's just old age creeping up, but this writer feels that the "cute" phonetics craze is one of the most banal aspects of amateur radio today.

Forget the phonetics in connection with the call of the station you're after, except when questioning him. There is no excuse for phonetics in a routine call, except for identification of *your station*.

Giving the correct location of your station, portable or otherwise, during the first call is a

*V. H. F. Editor, *QST*.

This fellow is DX on any band. Here we see VS6CJ, Hong Kong, with his 6-meter setup. The receiver is an S-36A with a 6J4 grounded-grid preamplifier. The transmitter runs a 6146 final, with controlled-carrier modulation.

big help to the other operator in a contest. At W1HDQ, more or less in the middle of New England's v.h.f. activity, we get many calls from stations off the side of the beam. If we knew which way to go we could often bring an S2 signal up to S8 or S9 with a quick touch of the rotator control, but if we don't know which way to turn we risk losing him completely. By the time we've dug a second transmission out of the mud the contact's over, and there's no longer any need for beam peaking. Giving precise location would help a lot here, especially *early* in the first call.

Then there's the long call without signing.

We finish a quick exchange and stand by, only to hear "W1HDQ W1HDQ W1HDQ William Number One Henry David Queen W1HDQ—" and so on ad infinitum until we give up and look for someone with more contest sense. This unwillingness to identify is bad enough at any time, but in a contest it is a pure ulcer builder. The sharp contest operator is interested in *your* call. Give it, and your location, after no more than three repetitions of his.

QRM in contests would be greatly reduced if we would abandon the almost universal habit of "tuning from the low end up." Only one thing is worse: no mention of where the operator is going to tune. Our bands are 4000 kc. wide, or more. With selective receivers and high activity levels it is unlikely that we will tune more than 200 kc. after a CQ or standby. If we make it clear where we are going to tune, prospective callers will shift to that range, or not bother to call, if they are stuck somewhere else. Result: answers where you want them, and no needless QRM elsewhere.

Vary the approach. Tune from your own frequency up, or down, or in some part of the band where restricted licensees may be waiting for you. Tell listeners what you're going to do early in the call, to give them a chance to comply. Don't leave it till the last word. How many times have you camped on a signal from a new section, while the fellow called a long CQ? Where to call him? You find out, if at all, in his last gasp. You've gambled that he's going to start at the low end, because most people do — but he winds up with "tuning from 146 Mc. down." You're sunk by this time, all nicely tuned up on 144.1!

These are just a few suggestions; some of the more obvious ways for speeding up contest operating. There are many others. One is to make more use of c.w. A contest is a long series of fast exchanges. You can get them over with faster on c.w. than on voice, and the weak-signal capabilities of c.w. are fine for fattening section multipliers. Contests are good code practice. The exchanges are simple and easy to send and copy. They give you a fine chance to build up your speed and accuracy, in addition to helping the score.

Contests grow on you. If you've been one of the I'm-not-in-the-contest-but-I'll-give-you-a-point people, why not plan to give the V.H.F. Sweepstakes a real try, come January? You'll find that it will make a better ham out of you. And it may be fun, too!

Here and There

VP5FP, Grand Turk Island, popped up on 50 Mc. in various places in Eastern USA in August and September. W5UQR, Metairie, La., worked Fred Sept. 5, at 1210 CST. K5SGP and K5PGS also caught this session, which lasted from 1145 to 1345 for W5UQR. No other DX was heard at the time. A late report from VP5FP shows that he worked 30 stations in the Gulf states Sept. 5.

W9JCI, Milwaukee, was issued 50-Mc. WAS No. 74 the other day. His father, W9JFP, holds No. 45, making them the only father-son team in our 50-Mc. WAS box. Thus far no 50-State 50-Mc. WAS has been issued. Who will be the first to make it?

A 50-Mc. s.s.b. net is in the process of formation in the New York area. The roster includes K2KGH W2SZE K2VIX K2JLR K2TSG and K2PCG. Phil, K2PCG, says that they would like suggestions as to a net frequency for s.s.b. work. He would also like to compile a list of active 6-meter sidebanders within reliable working range of New York. Write or work K2PCG, P. O. Box 608, Livingston, N. J.

LU3DCA writes of the opening of the *TE* season on 50 Mc. Aug. 27. Around 2150 LU time (1950 EST) Mike began hearing OA3AAE. A half hour later he worked XE1GE, TG9JW and KP4AAQ. On the 28th the band opened at 2200 with KP4s in very well. VP5FP was heard for a few minutes, in QSO with LU3EX. XE1GE and the KP4s were heard working CE, CX and LU areas not

50 Mc. WAS

1	W6ZJB	22	W6TMI*	38	W7ILL	56	W6ANN
2	W0BJV	21	K8EDX	39	W0DDX	57	W1SUZ
3	W0CJS	22	W5SFW*	40	W0DO	58	W1AEP*
4	W5AJG	23	W0ORE	41	K9DXT	59	W5LFH
5	W9ZHL	24	W9ALU	42	W6ABN	60	W6NLZ
6	W9OCA	25	W8CMS*	43	W6BAZ	61	W7MAH
7	W6OB	26	W0MVG	44	VE3AET	62	W8ESZ
8	W0INI	27	W0CNM	45	W9JFP	63	W2BYM
9	W1HDQ	28	W1VNH	46	W0QIN	64	W7ACD
10	W5MJD	29	W0OLY	47	W0WWN	65	K6PYH*
11	W2IDZ	30	W7HEA	48	K9ETD	66	W4HOB
12	W1LLL	31	K0GQG	49	W0FKY	67	K0JJA
13	W0DZM	32	W7FFE	50	W8LPD	68	K6RNQ*
14	W0HVW	33	W0PFP	51	W0ZTW	69	W9QWT*
15	W0WKB	34	W6BJI*	52	W6GCG	70	W6EDC*
16	W0SMJ	35	W2MEU	53	W2RGV	71	K6VLM*
17	W0OGW	36	W1CLS	54	W1DEI	72	K6GOX*
18	W7ERA	37	W6PUZ	55	W1HOY	73	W0EDM
19	W3OJU					74	W9JCI*

*49

VE7CN	45	VE4HS	41	LU9MA	26	LA7Y	20
KL7AUV	44	SM6ANR	30	ZS3G	26	VQ2PL	18
VE1EF	42	SM7ZN	29	CT1CO	24	JA8AO	18
VE2AOM	38	PZ1AE	28	CO6WW	21	JA8BU	17
XE1GE	37	SM6BTT	28	LA9T	21	JA1AAT	17
KH6UK	37	CO2ZX	27	LU3DCA	20	JA1AUH	16
EI2W	37	ZE2JV	26	SM5CHH	20	VP5FP	7

audible in Buenos Aires. Mike wants it known that he will be happy to QSL on all 50-Mc. contacts. If you have worked LU3DCA and have not received a card, let him know and he will oblige. In this connection, he lists 14 U. S. stations in 5 call areas from whom he has received no cards. Are 50-Mc. DX cards no more highly regarded than this?

Anyone who has had extensive amateur operating experience is likely to cringe at operating tactics he observes on the v.h.f. bands. How is it that our newcomers manage to copy all the worst features of ham operating on lower bands? Fellows who are in hard-to-work states, and those in other countries, could do a lot to correct bad operating practices if they would. They are in the driver's seat. Realizing this, W6KUH, an old hand at 6-meter DX, is going to make the most of his two years' residence in Idaho, now just beginning. Gordon will not have time for a full operating schedule, but he will do his best to catch 50-Mc. openings, and to provide Idaho contacts and QSLs for those who want them bad enough to learn how to call and sign. W6KUH/7 will have a good 50-Mc. setup at Idaho Falls, but you will not work him if you:

1) Give his call (or CQ) more than three times without signing yours.

2) Use longer than the "3-times-3" procedure.

3) Break in on the frequency of the station W6KUH/7 is working in an attempt to attract his attention.

You may be delayed in working him if you call on voice below 50.1 Mc. Gordon will tune about 50.1 Mc. until all possibilities have been exhausted before tuning the low edge. At this writing Gordon is using W6KUH/7, but will soon have a W7 call. We'll let you know what it is, as soon as it is available. Meanwhile, Gordon, we're all for you. We hope you make it stick!

Strange signals department: K1IZM/2, Hancock, N. Y., and others heard a DX signal from the north on 50.15 Mc. It was unmodulated, but loaded with meteor pings, and it had occasional DX-type fading and flutter. It was first heard Aug. 10, and remained weakly audible for several days thereafter. No identification was heard during this time.

The saga of KG1FN came to an end about Sept. 25, when the crew were airlifted back to the States. By that time they had run up quite a record and amassed information on 6-meter propagation in the far north never approached heretofore. Because their only link with the outside world was by radio, we do not have detailed information on their contacts, but a full report by the chief operator, W1IJD, is awaited with great interest. One thing is sure: 6 does work up to north of the Arctic Circle. The big mystery, then, is the lack of 50-Mc. contact with Alaska during our major sporadic-*E* season. KG1FN is expected to be in operation again in February and March, 1960.

KL7AUV, Anchorage, perhaps Alaska's most active 50-Mc. station, has been troubled with Channel 2 interference over most of the band in recent years, but Jack was able to work KG1FN frequently. The signal from Fletchers Ice Island, then some 700 miles north of Anchorage, was best between 2200 and midnight, Anchorage time. The signal was also heard consistently, though weakly, between 0900 and 1000. KL7AUV heard KG1FN working W6s around 2250 CST Sept. 3, but could find no trace of other signals. Jack has purchased a "stump farm" six miles south of Anchorage, beyond the Channel 2 QRM area, and he hopes to be in business down there by another summer. Meanwhile, he will be monitoring 50 Mc. at every opportunity, and running his automatic keyer on 50.08 Mc. when conditions appear favorable. He now has direct dialing telephone service, and can be reached at BRoadway 4-3751. It will cost you about 9 bucks for 3 minutes, from New England, but it might be worth the price for a shot at a 49- or 50-state 50-Mc. WAS.

Every September produces a few sessions of tropospheric DX of a caliber seldom approached in other seasons.

220- and 420-Mc. STANDINGS

220 Mc.

W1AZK	9	3	412	W5RCI	7	4	700
W1HDQ	11	5	450	W6NLZ	3	2	2540
W1OOP	12	4	400	K6GTG	2	2	240
W1RFU	11	5	480	W6MMU	2	2	225
W1UHE	11	4	385	K8AXU	8	5	680
W2AOC	13	5	450	W8IJG	9	5	475
K2AXQ	8	3	230	W9LPD	6	4	480
K2CBA	9	4	325	W8NRM	8	4	390
K2DIG	4	3	140	W8PT	7	3	550
W2DWJ	14	6	740	W8SVI	6	4	520
W2DZA	12	5	410	W9EQC	8	4	740
W3AHQ	4	3	180	W9JCS	5	2	340
W3LCC	8	5	300	W9JFP	9	4	540
W3LZD	15	5	425	W9OVL	5	2	290
W3RUE	5	4	225	W9UED	4	4	605
W3UJG	11	5	400	W9ZIH	5	2	270
W3ZRF	5	3	112	KH6UK	1	1	2540
W4UBY	7	5	320	VE3AIB	7	4	450
W4UMF	11	5	420				

420 Mc.

W1HDQ	8	3	210	W2DZA	5	3	130
W1RFU	8	4	410	W4HHK	3	3	520
W1OOP	9	3	390	W4VVE	6	4	410
W1UHE	3	2	430	W5RCI	5	3	600
W2AOD	6	4	290	W7LHL	2	1	180
W2BLV	11	5	360	W8HCC	3	2	355
W2DWJ	6	4	196	W8NRM	3	2	390
K2CBA	4	3	140	W9GAB	7	4	600

2-METER STANDINGS

Figures are states, U. S. call areas, and mileage to most distant station worked.

W1REZ	32	8	1300	W5NDE	11	5	625
W1AZK	26	7	1205	W5VY	10	3	1200
W1KCS	24	7	1150	W8SWV	10	3	600
W1RFU	23	7	1120	W5YYO	5	3	1330
W1AJR	23	7	1130				
W1HDQ	21	6	1020	W6WSQ	14	5	1390
W1MMN	20	6	900	W6NLZ	12	5	2540
W1IZY	19	6	875	W6DNG	9	5	1040
K1CRQ	19	6	800	W6AJF	6	3	800
W1AFO	17	6	920	W6ZL	5	3	1400
W1AFR	17	6	675	W6MMU	3	2	950
W1CLH	17	5	450				
				W7VMP	15	5	1280
W2NLY	37	8	1390	W7JRG	10	4	1040
W2CXY	37	8	1360	W7LHL	4	2	1050
W2ORI	37	8	1330	W7JIP	4	2	900
K2GQI	30	8	1200	W7JU	4	2	353
W2AZL	29	8	1050				
W2BLV	27	8	1020	W8KAY	38	8	1020
K2IEJ	25	7	1060	W8SDJ	35	8	990
W2AMJ	25	6	960	W8PT	34	8	985
W2DWJ	23	6	860	W8IFX	34	8	980
K2HOD	23	7	950	W8LOF	33	8	1060
W2PAU	23	6	753	W8RMH	32	9	910
W2SMX	22	6	940	W8SVI	30	8	1080
K2CEH	22	8	910	W8SFG	30	8	1000
W2LWI	21	6	700	W8EHW	29	8	860
W2RXG	20	6	700	W8LPD	29	8	850
W2UTH	19	7	880	W8WRN	28	8	680
W2RGV	19	6	720	W8BAX	28	8	960
W2WZR	18	7	1040	W8NOH	26	8	975
W2ESK	18	5	850	W8DX	26	8	720
K2RLG	17	6	980	W8ILC	25	8	800
				W8JWV	25	8	940
W3RUE	30	8	975	K8AXU	24	8	960
W3TDF	29	8	1050	W8GFN	23	8	540
W3GKP	29	8	1020	W8LCY	21	7	610
W3KCA	28	8	1110	W8BLS	21	7	610
W3SGA	26	7	700	W8GTK	17	7	550
W3EPH	22	8	1000	W8NRM	17	7	550
W3BYF	22	6	660				
W3LNA	21	7	720	W9KLR	41	9	1160
W3NKM	20	7	730	W9WOK	40	9	1150
W3LZD	20	7	650	W9GAB	34	9	1075
				W9AAG	32	8	1050
W4HJQ	38	8	1150	W9REM	31	8	850
W4HHK	35	9	1280	W9ZIH	30	8	830
W4ZXI	34	8	950	W9LVC	27	8	950
W4AO	30	8	1120	W9EQC	27	8	820
W4LTU	29	8	1160	W9ZHL	25	8	700
W4MKJ	28	8	850	W9BPV	23	7	1030
W4UMF	28	8	1110	K9AQP	24	7	900
W4VLA	26	8	1000	W9PBP	24	8	820
W4ESQM	25	8	1040	W9OJI	23	8	850
W4WNH	24	8	850	W9LF	22	7	825
K4EUS	24	6	765	W9KPS	22	7	690
W4JCJ	23	6	725	W9CUX	21	7	800
W4VVE	21	6	720	W9PMN	19	6	800
W4TLV	20	7	1000	W9ALU	18	7	800
W4IKZ	20	6	720				
W4OLK	20	6	720	W0SMJ	29	9	1075
W4AIB	19	7	840	W0IHD	27	7	890
W4CPZ	18	6	650	W0IFB	27	8	1060
W4RFR	18	7	820	W0QDH	24	9	1300
W4MDA	17	6	750	W0RUF	23	7	900
K4YUX	16	8	830	W0INI	21	6	830
W4RMU	15	7	1080	W0UOP	21	7	900
W4LNG	15	6	1080	W0TGC	21	7	875
				W0RYG	20	8	925
W5RCI	34	9	1215	W0IC	16	7	1240
W5DFU	25	9	1300	W0IFS	16	6	1100
W5AJG	25	8	1360				
W5LPG	25	7	1000	VE3DIR	30	8	1330
W5KTD	23	8	1200	VE3AIB	27	8	1340
W5JWL	21	7	1150	VE3BQN	19	7	790
W5PZ	16	8	1300	VE3DER	17	7	1340
W5VKH	15	5	720	VE3AQG	17	7	1300
W5ML	12	5	700	VE3HW	15	7	1350
W5FC	12	5	1390	VE2AOK	13	5	550
W5HEZ	12	5	1250	VE3BPB	14	6	715
W5FYZ	12	3	735	VE7FJ	2	1	365
W5CVW	11	5	1180	KH6UK	1	2	2540

The TV equipment at W2VCG, Pennington, N. J., is entirely home-built. Details are given in the text.

VE3DIR, Toronto, says that the night of Sept 11, and the first 3 or 4 hours of the morning of the 12th, were such a period. Tony worked W4GSH, Louisville, Ky., W4HHK, Collierville, Tenn., and W5JWL, Gurdon, Ark., on 144 Mc. W5JWL is more than 900 miles. Heard were W5PZ, Ponca City, Okla., W5RCI, Marks, Miss., and W5KTD, Shreveport, La. Several tests were made with W5KTD, 1100 miles, but no two-way was accomplished.

When K8AXU/8, operating from 4000-foot Bickel's Knob, near Elkins, W. Va., set up for business about 2000 Sept. 11 he knew things were opening up. By 2030 stations in Wisconsin and Illinois were coming in about S4. At 2320 W5PZ was heard on c.w. working a W9. He was raised soon after, for what is probably the first 144-Mc. QSO between West Virginia and Oklahoma. This is nearly 1000 miles; not bad for 25 watts. Shortly after midnight K8AXU/8 worked WØEMS, Omaha, Neb. Al thinks that often 2-meter men quit too early in the evening when weather conditions look promising. He says that he hears stations out to about 400 miles or so weakly in the early and middle-evening hours. Then suddenly signals from the 1000-mile range appear, often stronger than the ones at shorter range.

From the PRP Reports

Participants in the ARRL Propagation Research Project get a more detailed report each month from W1VLH/6, but the logs from the project provide information of interest to all 6-meter men, so we look them over for significant news before sending them out to Mason. Here are a few tidbits from the August batch.

The extraordinary nature of August sporadic-*E* skip is clear from the log of W4GJO, Sarasota, Fla. Grid worked DX 14 days out of the first 23 of the month. *Es* contacts were reported by all American observers, with even the most northerly finding the band open on at least 6 days.

The marked difference in transequatorial propagation on 50 Mc. in different parts of the world is shown by the PRP file. Active 50-Mc. men such as CX9AJ, LU2FAO and LU7AT had nothing in the way of 50-Mc. DX to speak of from early May until Aug. 27 and 28. Around the latter time the band began to open from the Buenos Aires area to Mexico City and Puerto Rico, apparently the optimum *TE* paths in this hemisphere. Two other circuits, Southern Rhodesia to Cyprus and Japan to Australia, showed almost daily openings right through the summer season. ZE2JV, Hatfield, Southern Rhodesia, got through to ZC4WR, Cyprus, 17 times out of 26 tries in August. VK4NG, Rockhampton, Australia, worked or heard Japanese stations 25 days. KH6s were logged on Aug. 27 and 29 as well. VK9XK, Port Moresby, Papua Territory, logged JAs regularly through August, and KH6s on Aug. 6, 11, 12, 13, 27, 28 and 31. K6HGP/KH6 had VKs logged 9 times in August.

JA3CE had 17 days of DX to Australia and the Philippines. VK6BE, Perth, Western Australia, found the band open less often, but still heard or worked JAs 6 times. He was one of several operators reporting reception of HLKA, Seoul, Korea, on 49.6 Mc.

ZS1LA, Worcester, South Africa, finds 3000-foot mountains no barrier to work into the Capetown area, 60 miles away. He is running skeds regularly with ZE2JV, VQ5GF and ZC4WR, to determine if *TE* extends that far south.

From Cuba, CO2ZX reports that CO2RR CO2MW CO2QY CO2GX CO2FM CO2JV and CO5JP are the most active 50 Mc. stations.

220 and Up

Some fine work was done on 220 in late August, just too late for details in last month's column. This included a shot across the Great Lakes, from Toronto and Western New York to Wisconsin and Illinois, the night of Aug. 24. VE3AIB, Toronto, worked W9ZIH and K9DOE in the Chicago area, and W9JFP, Milwaukee, along with W8s VIY SZN IJG and PT. W8s and 9s were heard on 144 Mc., but there was nothing remarkable about 2-meter conditions. This bears out the supposition that we are only beginning to realize the possibilities of our bands above 200 Mc. Les runs 50 watts input to a 6252 on 220.09 Mc., phone and c.w.

W9JFP says that there were many signals on the band from behond the normal range that night. W2EJO, Ellicotville, N. Y., was his best DX. This and the contact with VE3AIB are believed to be 220-Mc. firsts from Wisconsin. Vic now runs 500 watts and a 32-element array on 220. He is on at 2230 Monday through Friday looking for business from the East. Saturday and Sunday nights he checks 220 at 2000. A kilowatt amplifier is about ready to go at W9JFP.

The night of Aug. 24 was a good one for K8AXU/8, who works regularly from Bickel's Knob, near Elkins, W. Va., on both 220 and 144 Mc. He worked W2EJO on 220 with S9-plus signals. On Sept. 5, beginning at 2200, he found the 220-Mc. band open to the east, and worked W2AOC W2MGF W2WOF and W2DWJ, all in the New York area.

Don't forget the aurora possibilities on 220. W3LZD, Dunmore, Pa., never misses a chance in this department. One of the first ever to work aurora on 220, Ted caught W9ZIH during the big aurora session of Aug. 16, for state No. 15. He leads the country in states worked on 220, and his aurora work is largely responsible.

Our recent request for information on active amateur TV stations (no closed-circuit reports, please) brought pictures and dope from W2VCG, Pennington, N. J. Martin has a flying-spot scanner (lower left in the photo) for test patterns. The main rack has regulated power supplies, sync and blanking generator, vidicon drive unit, 144-Mc. exciter, and 9003 final. On the top of the rack is the video amplifier system. The vidicon camera is at the upper right.

The equipment at W2VCG is entirely home-built, including an experimental iconoscope camera, vertical and horizontal drive transformers, deflection coils and alignment coils. Currently Martin is working on a tricolor flying-spot scanner. Will this be the first American amateur color TV station?

Amateur microwave interest is high in the San Diego area. K6JVG says that the Microwave Group of San Diego has been functioning with about 20 members for the past year. They have equipment for 144 to 10,000 Mc., but activity is being concentrated on 1296 and 10,000 Mc. currently. They will be glad to hear from other groups or individuals interested in microwave work.

New American 420-Mc. Record

The north-south tropospheric opening of Sept. 11-12 provided W5RCI, Marks, Miss., a chance to test out a new 64-element collinear array for 432 Mc. Rex had a go at 432 with W9GAB, Beloit, Wis., the night of the 11th, but no signals were heard. A schedule was made for another try at 0700 CST. Contact was established at once on c.w., with signals reported 539 each way. The distance is 600 miles, a new American record for the band. W5RCI runs a 4X150A tripler at 50 watts. His converter is crystal controlled, with a 416B coaxial r.f. amplifier.

OES Notes

W1AHE, Stow, Mass. — Have heard Novices and Technicians using c.w. at 145 Mc. Suggest that all amateurs whose licenses permit use of the whole band make a real effort to help this good trend along by tuning above 145, as

(*Continued on page 144*)

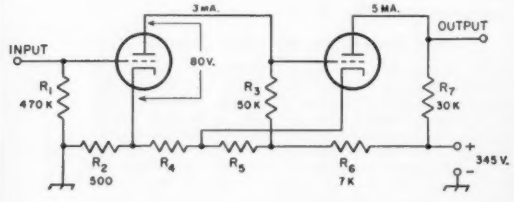
Silent Keys

It is with deep regret that we record the passing of these amateurs:

W1CJF, William P. O'Brien, Jamaica Plain, Mass.
W1IAO, William G. Kidd, Revere, Mass.
W2AOD, George P. Benda, Flushing, N. Y.
W2JUU, Fred H. Yost, Belleville, N. J.
ex-W2LYS, Harry J. Housten, Panama City, Fla. (formerly Rutherford, N. J.)
W3AER, Christopher E. Hobson, Wilkinsburg, Pa.
W3KXC, Andrew J. Shuman, Nemacolin, Pa.
W4KBE, Wayne M. Eller, Petersburg, Va.
W4RWR, Charles E. Hughes, Miami, Fla.
W5HZV, Harold F. Weinzel, Baytown, Tex.
W5OK, Lawrence W. Stinson, Dallas, Tex.
W6BWI, Harry D. Morse, San Diego, Calif.
W6GWB, Phillip G. Frazelle, Washington, D. C. (formerly Norwalk, Calif.)
K6IQI, Leroy C. Heath, Los Gatos, Calif.
K6PEJ, Dale E. Linn, San Bernardino, Calif.
K6VFW, Capt. Dale W. Robertson, Novato, Calif.
W7BLN, George William Worthley, Coos Bay, Ore.
W7TSG, John Warwick, Great Falls, Mont.
W8ED, Edward C. Wahl, Birmingham, Mich.
K8JKZ, Henry J. Shenkosky sr., Harper Woods, Mich.
K9CQO, Gus P. Nonweiler, Indianapolis, Ind.
W9EAD, Walter S. Du Bridge, Decatur, Ill.
W9LLC, Emil L. Pradoni, Pekin, Ill.
W9IVL, Arthur W. Terry, Monett, Mo.
WØZKK, Chancie O. Davis, Derby, Colo.
G13AXD, Joe Burnley, Belfast, Northern Ireland
G13BXH, William H. Douglas, Saintfield, Co. Down, Northern Ireland
VE1FL, Fred E. White, Saint John, New Brunswick
VK2SS, A Skene-Smith, Black Heath, New South Wales, Australia
VQ2GR, Gordon W. Rowe, Luanshya, Northern Rhodesia

Quist Quiz

Here's a variation on the Ohm's Law gambit, proffered by Ken Lamson, W1ZIF of Windsor, Conn., and the *QST* Laboratory staff. Old timers will recognize the circuit below as that of a d.c. amplifier; the problem is to find the current through R_5.



Take a zero for last month's effort if you didn't determine that the tower at K8ABC was 33⅓ feet high. No, it doesn't make any difference how far apart the towers are (up to the point where the earth's curvature or sag in the guy wires becomes significant).

25 Years Ago this month

November 1934

. . . "Practical Communication on the 224-Mc. Band" was the title of an article by Ross Hull, featuring directive antennas and an acorn tube.

. . . Other technical articles described a two-way telegraph and telephone system for code practice, high power from the crystal oscillator, the directive antenna at KA1NA (that was the Philippines in those days), the relay rack in amateur construction, d.c. measurements with the ham station analyzer, and the usual collection of hints and kinks. . . . In the Station Activities column we note that W1CJD was one of the busy Route Managers.

. . . Also in this issue was first call for donations of old-time radio gear, so that a museum could be established at ARRL Hq. for the benefit of future young squirts. As any visitor to 38 LaSalle Road can show you, this plea really brought results.

Strays

Steve Rudnick, W1KYB, of Chelsea, Mass., says he doesn't claim amateur radio is a prerequisite for entrance to M.I.T. — but he does think this is an interesting item:

All four Chelsea boys who entered M.I.T. this fall were hams or ex-hams . . . W1JZJ, KN1IQY, ex-KN1DJA and W1KYB.

In Jacksonville, Fla., on Sept. 18, 1948, W4LZM was hunting for a new country when he heard a faint ". . . this is ZC6XY in Jerusalem, Palestine." After a few minutes of dodging QRM, W4LZM QSOd the elusive voice. The voice said he was John from Chicago, transmitting from the American Embassy in Jerusalem. W4LZM said he was Bob and thanks for a 76th country. The two duly exchanged QSLs and forgot each other.

So they were amazed this year to meet again—as Lieutenant Commander Robert H. Byrne and Warrant Officer John H. Swanson . . . both assigned to the Electronics Supply Office at Great Lakes Naval Training Center. Byrne, now K9GIO, checked his log when a casual chat had revealed their former call letters, and confirmed his contact with Swanson, now KØARQ. He also noted the QSO was overheard by a shortwave listener, URSA-3-165, in Tula, Russia, who also sent a QSL.

W4LZM and ZC6XY eleven years later.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

November, as usual, brings our northern latitudes well into the lower-frequency DX season. At this stage of the solar cycle surprising things can happen to the stray night owl who does his 160-, 80- and 75-meter tuning carefully. "Hey, dad — Singapore!" On the other hand, seemingly out of nowhere, a barrage of atmospheric cracklings may make it impossible for him to copy locals in the next town. Will the racket dissipate in time to let the ZLs through, or should he hit the sack with *QST*? (He pulls the switch, only to learn next morning at the office that he quit too soon, neatly missing a round table with Christmas Island.) . . .

> Mountains, desert areas, and the tropics are important sources of static interference. Storm centers . . . are common causes of static, and it has been found possible to trace the course of a tropical hurricane by taking bearings upon the static received at a moderately distant point. When most of the static arriving at a receiving location is of distant origin it is commonly found that these sources tend to be in certain directions. Thus observations of long-wave static received in Maine indicate that, barring local thunderstorms, most of the disturbances have a southwesterly origin apparently in the Gulf of Mexico or Texas, while similar observations in Europe indicate sources in Africa. The same is true of static received at high frequencies. When the static is of distant origin it is found that the same impulse will simultaneously produce interference at widely distant points, as, for example, Maine and England.
>
> — Terman, *Radio Engineers' Handbook*

Last month we mentioned that one "How's" reader employed U.S. Navy Hydrographic Office data and other material to construct a device that conveniently correlates remote local times. Lower-frequency DXers in the scratchy zones may be interested in a similar try-to-do-it-yourself approach noted by W9HPJ in his May-June 1959 copy of *Radio Officers' News*.

Briefly, with reference to Radio Weather Aids, Vols. I and II, H.O. Pub. No. 206, merchant marine radioman Earle C. Foster uses SYNOPS broadcasts (*e.g.*, WBR, Miami, on 4061.5, 8140 and 13,624 kc. at 0110, 0710, 1310 and 1910 GMT) to whip up a "poor man's weather map" in less than an hour's time. Simple accessories are traced blank outline maps of the areas concerned, and pencils of red and blue, three shades each for lows and highs. After getting the hang of it, Earle claims, it's fairly easy to establish the intensity of the pressure system, whether lows are deepening or filling, severity of disturbances along frontal lines, how fast a pressure system or front is moving, and indicated directions of activity.

The resultant homemade item, states OM Foster, "Is less than two hours old, and often four hours ahead of the isobaric gyrations of normal analysis broadcasts. To date my weather prognostications have cost me only two cases of humiliation and one of beer. You get sly after a while and use wording even an astrologer would envy."

Wording, shmording — will tomorrow morning's static level be low enough to give you a shot at ZL3RB on 160 or 80? To key or not to key, *that* is the question. Can it be figured? There seems to be room for some venturesome search and research here.

What:

Turkey time bathes the shack in a cozy glow and a DX man can find plenty of action all the way up through 28 Mc., more than enough cheer to justify serious Thanksgiving. We illustrate this with our usual band-by-band inspection of the megacycles wherein frequencies (in number of kc. above the lower band-limit) appear within parentheses, (23) indicating 14,023 kc. if the paragraph treats 20-meter work. Times are GMT using the nearest whole-hour figure such as 7 for 0720, 0 for 2349. Thus in the 10-meter phone paragraph "YS1LA (735) 22" means that this station has been observed on 28,735 kc. around 2200 GMT. Such "How's" shorthand helps us save space for the more readable and less stylized "Where" and "Whence" text. Let's try it. . . .

75 phone's renewed DX potentialities are pointed up by WØWMA. "We've been getting nice openings to ZL-land on 3.8-Mc. sideband. A whole gang of us have been Q5 down there on numerous occasions since last winter.

*4822 West Berteau Ave., Chicago 41, Ill.

ZL1s AAX and ACG have the biggest signals from Down Under and some of our fellows who have made the grade are W2s BLP PEO, K2TOU, W3MFD, W6TTB, K6GOP/6, K9BSE, W0s JVM TVE WQQ and yours truly. An interesting sidelight is the preponderance of open-wire tuned feed lines among our gang. Collinear skywires and verticals-with-directors are favorite radiators and very few of the boys are without antenna couplers — shades of the 'old days'! Many of us have extensive ground systems and really get a wallop out of getting into New Zealand with low power." [Hey, Boss — could be our Zepp is coming back in style! — *Jeeves.*] We take this opportunity to adjure 75-meter W/K/VE chaps to tune meticulously '*way* down the band. There are, for instance, plenty of Europeans available on phone between 3600 and 3700 kc. when the wind blows right. They go unworked season after season mainly because of the Yankee habit of tuning just a few kc. off the low edge of the W/K phone suballocation. Swing out! And keep Jeeves informed of your results, if you will.

40 **c.w.** seems in for a real going-over as time goes on. Those who dangle mere dipoles will have to contend with antenna farms such as K2DGT's: a full-size 7-Mc. three-element rotary 100 feet high, plus a ground-plane with fifteen buried radials, plus push-pull 4–400s. Yikes! [There goes our Zepp back out of style, again, Boss. — *Jeeves.*] Anyway, W1FYF, K2s DGT UYG, K4IGD, K5JVF, W6JQB, K6STI, W7s DJU YAQ, K7CPC, W8s GKB IBX and W9JJN affirm the 40-meter availability of **CO**7RV (4) 4, **DU**7SV (10) 13, **GB**2AC just England, **GD**3UB 6, **HA**s 1KSA 5KBP (20), 7PZ 9KOB, **JA**s 1AEO OANP 1BLV 1BNB 1BNW 1BTH 1CID (15) 10, 1CMY 1CVV 2BR 2HX 2UJ 2YL 3EC 7XF 8AE 8GU (30) 10, 8HO all between 8 and 13, KG6CY/**KG6** 13, **LZ**1s KBA KBL KDG KKZ KSD, **OA**4FM (20) 3, **OX3**RH, OZ4LP/mm (10) in the North Pacific, **PJ**3AD 10, **PY**s 4AXN (3) 13, 7AEE (8) 11, **SP**5BR 4, **TG**9s AA LM, **TI**2WR (105) 5, **UA**s 6FC 6FD 6MK **0**FF 9 of Sakhalin, **UB**5s BR KAB KBO LH TR ZE, **VE**8PZ, **VK**s 2AQF 3FC 3FH 3MH 3XB 4ZU 5JE 5ZC, **VP**5FP, **VR**2DK (10) 6–8, **XE**1B (13) 16, **YN**1MN, **YO**s 2BB 3IE 3RH 4WE, YUs galore, **YV**5AL, curious **ZA**1KAA, **ZL**1AT, **ZP**5AY, **ZS**s 1O 1OE 5RM 6ANI, **4X4**s II and JU . . . . . Another antenna-farmer, W8GKB, cracks tough 7-Mc. phone odds for sideband stuff like **DL**1-FF, **JA**2AHH (104), **HP**3FL (106) 10, K3BUU/**KP4** (296) 11, **KG**1FR (296) 3, **KH6**s CHU (210) 9, PD (205) 3, **KL**7-AIZ (296) 8, **VP2**KH (130) 9, **XE**2FA (296) 3 and **ZL**3ID (115) 10 with occasional c.w. aid at the DX end. Jon also hears the gang yelling for **ZS**1O on a.m. now and then . . . . . Noviecwise on 7 Mc. we hear that **KH6**s CTN CWQ CWW CZT DEX, **KZ5**TJN (195) 4, **WH6**s CSQ CTN CTZ DBY DEG and **WL7**CWH soon will be shipping colorful wallpaper to lucky KN4GSD and WV6BXG.

20 **c.w.**, if you prefer your prefixes juicy and your pile-ups really *mad*, dad, is its same old sanguinary self. Long-path openings — VKs and Asians in the U.S. afternoons, etc. — pep up the autumn action and so do a few random DXpeditionary enterprises. W1s DGT FYF WPO, K1IFJ, W2s JGQ KIR TVR, K2s DGT JLD UYG VNO, WA2FNA, W3CMN (70/58 worked/confirmed), K3CUI, W4s IMG IUO (146), MZP, K4s IGD (100), ZYI, K5s LLJ TER (113/62), TYW, W6s JQB KG YDK (Ws 3ZZQ and 4CGO keying), K6s CJF LAE (170/150), STI, WA6CRQ, W7s DJU (104/88), LZF OEB (134), YAQ, K7s AGJ HDB, W8s IBX (190/174), KML (279), KX YGR, W9s JJN MAK (138/110), WNV (90/50), K9JIN, K**0**s JPJ/**0** RHE, EL4A, HK5SG, KP4s AOO (120/103), ARR (40/4), VE1PQ and 5A5TF put the 14-Mc. A1 finger on an improbably licit AC4AX, **BV**1s USB (50) 11–12, USC (17) 6–10, **CE**9s AK AL AS (29) 0–1, **CM**2QN, **CN8**FO 21, **CP**3CN, **CR**s 4AX 5AR of Sao Thome, 6**DA** 7**BN** (30) 13, 7**CH** 0, 7**CS** (35) 14, YL 7**LU** (78) 14, 9**AH**, **CT2**s AI (69) 19, BO 20, **CX**1NE 19, **DJ**5s DZP GG (52) 18, **DL**s 5BY 8DL, **DM**2s ACA ADC ADL, **DU**s 1RTM 1VQ (38) 16, 6IV 7SV (70), **EA8**BF 0–2, **EL**4A, **FA**s 2TW 8RJ, **FB8**s XX (73) 14, YY ZZ (20) 9, **FF8**s BZ (36) 8, CG (35, 79), CI (80) 7, **FG7**XG, **FK8**s AI (30) 10, AW, **FO8**AC, **FQ8**s AJ AZ BA HK 21, **FR7**s ZC (98) 13, ZD, **FU8**AG (62) 7, **FY7**s YF (50) 11–13, YG (107) 2–3, **GC**2FMV, **HA**s 1K8A 4YB 5DH 5KFR 8CG 9KOB, **HC**s 1JU 4IE (35), **HH**2s GR (58), LD (60), **HK**s 1IU 6–11, 3KG 4JC (65), 5SG 6IC, **HP**1AO, **HR**2FG, **IS1**GF, **IT1**s AE (75) 5, CDS 0, **JA**s 1CR 1EC 1RC 2AA 2AB 2AW 2DO 2RZ 2UR 3API/mm 3AQ 3CV 5AI 6AFG 6XO 7AD 7BD 8GR 8OF 9AA 9FV **0**AD **0**BB, **JT1**AB (60) 13, **JZ0**DA, K6QPG/**KW6**, **KA**2s KH KM (67), **KC**s 4USH 4USV 6KR (68) 13, **KG**s 1BA 1FN on Fletcher's ice chip, 1FZ 6AIG, **KM6**s BI BT, **KR6**s AM HV JM MD 11, **KV4**s AA (80) 19–22, BO (77) 2, **LA**s 1NG/**p** (50) 4, 2TD/**p** 3SG/**p** (25) 17, **LU**s 3XO 3**ZX** 6XO, **LZ**1KPC, **MP4BCU**, **OA**4s AX (11), FA 20–23, FT, **OD5**LJ (40) 5, **OE**s 5AW 5GD 6RS 7FW, **OR4**RW (35) 6 of the Belgian Antarctic, **OX3**s DL UD, **OY**s 2H 6, 3PF 7ML 20, 8RJ (20) 6, **PJ**s 2AE (50) 12, 2CA 2ME 1 of Sint Maarten, 3AB (25), **PZ1**s AH 11–12, AP, RAEM of Moscow, **SL**2AD just Sweden, **SM**1BVQ of rarer Sweden, **SP**s 2BA 2NR 7HX, **SU**1MS 22, **TG**9LM, **TI**2s DN PZ WD, **UA1**KAE/**6** of Russia's antarctic effort, **UA9**s CM KAG KCC KSA SB VB, **UA0**s CT JB KCA KFG KFM KIA KUV KUW LU LW, **UB5**s CK ER GA KAG KCB KCD KIJ NK SD SP TG UG ZE, **UC2**s AD AX BB KAR WP, **UF6**AB, **UH8**AK, **UI8**s AE AG (40) 12, KAA KAE (90) 14, **UL7**s HB KAR, **UN1**s AH (105) 5, AN, **UO5**PK (22) 7, **UP2**NM (30) 18, **UQ2**AN (20) 5, **UR2**AO, VEs 3EGD/**SU** due for closedown, 8NJ **0**NS, **VK**s **9**RF **9**RH **9**RO (90)7, **9**WP **0**CC **0**TF 4–8, **VP**s 1SS 2AR 2GAK (39), 2LO 17–18, 4TF 6AG 6AP 6PJ 7BT 8DM (30) 1, 9AX 9DK 9EP 9EU 9EW 9G, **VQ**s 2EW 2GW 3CF 3GC 6LQ (20) 14, 8AD, **VR**s 1B (85) 8, 2DK, **VS**s 1EB 1FZ 1JU 1JW 4BA (90) 14, 5AD (70) 15, 6EE 9OM (90) 21, **VU2**s AR (80), BC (20) 11–12, BK (10) 10, CK (5) 17, NR (20) 12, RM, **XE**s 1AAI 1AX 1BA 1YF 2LA, **XW8**AL, **XZ2**s BB (43) 16, TH (40) 16, **YJ1**DL (35) 7, **YO**s 1CD 3AI 7EF (28) 2, 8KAE, **YV**5s ADP AHH (30), EZ HL, **ZB2**I, 20, **ZC5**AF, **ZD**s 1FG 2GUP 2HHT 2VPF, **ZE**s 1JU (10), 1JV (63) 21–22, 3JO (24) 14, 8JI 8JN 8JO (60) 15, **ZK**s 1AK (40) 4, 2AD 7–12, **ZL5**AE, **ZP**s 5AY (90) 12, 5CF 5LS (80) 12, 9AY, **ZS**s 3T (10) 16 of Walvis Bay, 7M (80) 15, 4S7FJ (69) 11, **4X4**s GD (120) 4–5, II 19, 5A5TO, **7G1**A (49) 19–21 of the Republic of Guinea, **8J**1AA (62) 11–12 of Japan's antarctic area, **9G1**s BM BQ CX, **9K2**AD, **9M2**s BK (82) 14, EV FR (42) 10–11 and G2 (19) 17.

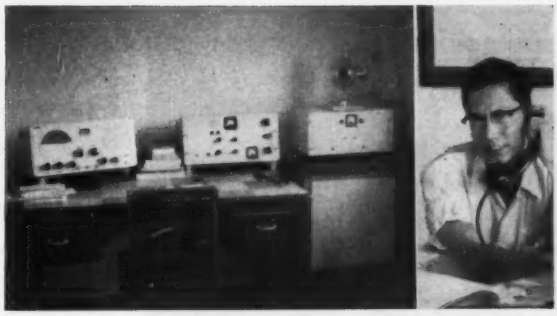
20 **phone** fails to frustrate W2JGQ, W4TK, K5TER, K6LAE, W6YDK, W7YAQ, W8IBX, EL4A, KP4-AOO, VE1PQ (113), listeners C, Morrow and L. Vervoort who advise us of such 14-Mc. regulars as **BV**1s US USC*, **CR7**s DI (185) 14, IT (190) 14, **EA8**BC (150) 3, **EL**4s AJ (190) 6, **FK8**AU (175) 6, **I5**GN* (315) 5, **KA**s 2TN 6, 8LF 7, **0**IJ*, **KC**s 4USB* 6SP 6TM 6, **KG**s 4AA 6AGV 6SA of Saipan, **LA**2TD/**p** (100) 21, **PJ**2CE (190) 5, **TG**9AD (150) 5, **TI**2CHV* (310), **UA0**KFM, VEs 6QG/**SU** 8NH*, **VK**9s AA (180) 14, AD (150) 6, transient VQ1HE 15, **VP**s 5CB 9EC, **VS**s 6AE (190) 13, 9QM (90) 0, W7AHW/**KG6**, **YS**1MM*, **YV**5AI, **ZD6**DT (130) 14, **ZE**7s JR (132) 14, JZ (168) 14, **ZS6**TA* and **9M2**GA (185) 14 . . . . . Turkey-based K9ACH logs lots of 20-phone r.f. from K1HTI, W6s HX VSS, WA6AMZ and W7VE when the bounce is right. Oh, asterisks mean s.s.b.

15 **phone** adherents K1s IMD LST, W2JGQ, W4KCE/2, K4ZYI, K5TER, K6s LAE QPG/KW6, K9JIN, K**0**JPJ/**0**, EL4A, KP4AOO, VE1PQ and L. Vervoort suggest you snag **CN8**s FV (222), JX, **CT1**PK, **DM2**ACA, **EA8**CO, **EL**4A, **FQ8**s AZ HE 18, HF 18, **GB**3GPW, **GC**6FQ, **HH2**Z, **HI8**CJY, **HK0**AI of San Andres, strange HL0KD, **HP**s 1SB 3GU, **HR1**HP, **HS1**E 16–17, K5UXU/-**VO1** (270) 14, **KC4**USB, **KR6**s HI 17, HT, **MP4Q**AO 21, **OA**4IGY, **OE**3VP, OH3PB/**OH0**, **PJ**2CM, **PZ1**s AC 22, AX, **SV0**WT/Crete, **TI**2s OE VMB WD, **TF**s 2WDV 2WEE 3KA, **UA9**CM (100) 15, **VP**s 3MC 5AB 6ZX 8DW, **VQ**s 4CC 6AB 15, **VR2**s AS (384) 5, AZ 19, BC (230) 5, **VS9**s AH (205) 3, AZA of Quati State, **VU2**s NR 88 16, **XE**3AX, **YA1**IW 18, **YO2**KBN, **YU2**CL, **YV**5DZ, **ZD**s 1PB 2AMS 6JDT (248) 15, **ZP**5s LZ MQ, **5A**s 2CV (230) 16, 5TO, **9G1**DF and **9K2**AZ . . . . . K9ACH would have liked giving Turkey contacts to ex-W1AW operator W2MHW/mm above the Arctic Circle, W2ZQK, K2JDW, W3RIS, K5GMB, W6NBU and K**0**RDO whom he heard boiling into the Middle East on 21-Mc. phone.

15 **c.w.** enjoys its autumn boom while W1FYF, K1IFJ, W2s GVZ JGQ, K2MBX, WA2FNA, W3ZRQ,

PJ2CK likes to lurk near 14,100 kc. much of the time but he's rapidly developing quite a taste for 160 meters. The big catch: No. 1.8-Mc. transmitting activity is authorized in the Netherlands Antilles. August nevertheless thoroughly monitors and logs the DX doings of luckier brethren here and abroad. (Photo via W1BB)

***QST* for**



VS4BA, despite his landwire pose here, prefers c.w. work DXclusively. This neat Kuching layout is augmented by a two-element 20-meter rotary which often sprays solid signals Statesward near 14,090 kc. around 1400 GMT.
Photo via Ws 1WPO and 5UX

K3CUI, W4s IMG KCE/2, K4s IGD ZYI, K5s TER TYW, K6EWY, WA6CRQ, W7s DJU YAQ, K7HDB, W8s IBX KS YGR, W9s MAK WNV, K9s ELT (110/93), JIN JWH, KØJPJ/Ø, EL4A and KP4AOO lower their 21-Mc. booms on **CN8s** IF JX, **CR6s** 5AR 6BX 7LU, **CT1s** IQ NT (67) 18, **CXs** 2BT 5JE, **DL8s** AX DX 20, **DM2s** ACA AII, **DUs** 1FM 18, 7SV (50) 13, **FA8TT**, **FO8AT**, **FQ8AJ** (93) 16–23, **GC3HFE**, **JAs** 3AF 21, 3IS 4QL 21, 6PA 7AD, **KC4USV**, **KGs** 1FR 4AI 4AV, **KM6BT**, **KR6QB** (70) 15, **LA3SG/p** (45) 15, **OA3D** (30) 0, **OD5s** CI 19, CL, **OEs** 1FF 1SB 10–11, 2VR 3WB, **OQ5s** IG (5) 23, PE 17, **PY4ZI**, one PX1AA, **SPs** 1JN/mm 5BR 5GX 6KBE 15, 7HX 8SR 9RF 20, **TI2LA**, **UAs** 1BU 1KDM 2KAW 3AH 3MK 4HC 6KOD 9VB (20) 2, ØKDA (5) 15, **UB5s** AI AQ TN, **UC2s** AA AX, **UD6AM**, **UI8AG**, **UN1AB** 18, **VPs** 6AG 9EN, **VQs** 2GW 2JM 3CF 18, 3GC, W2AIS/mm of ZC8PM fame, WA2HHU/**VO1**, **XE1s** AAI AX YF (10) 3, **XZ2TH**, **YA1AO**, **YOs** 2CD 3KAB 3RI 3UM, **YV3CB** (120) 4, **ZC4MM**, **ZD7SA**, **ZE3JJ**, **ZP9AY** (5) 0, **4S7FJ**, **4X4s** FU IM LC 21, LH 21, **5As** 2CV 22, 5TO, 5LWP/mm off Surinam and Guinea's **7G1A.**

15 Novice sportsmen, particularly WV2s GHD HOZ KN4EMX, KN5SCT, WV6s BXG (11/9), FOL, KN8s NHC (27), POU and QEX, winged such exotic birds as **CN8s** GV IT, **DJ5CQ**, **DU7SV**, **GMs** 2TW 3HQN 3UU, JA3AMM/mm, **KG1FN**, **KH6CYB**, **KL7s** CDF FAO, **KZ5s** CT SW WXN, **LA4AG**, **LUs** 5KH 8FBH, **OE1FF**, **OH1s** QJ UO, **ON4s** PX WR, **PAØTAU**, **SMs** 3ADP 5CCE, **SP2BA**, **UAs** 3HI ØKDA, VE9NI, **VKs** 3TX 4TY, **WH6DBF**, **WL7DEF**, **WP4s** APP ARZ, **ZLs** 1VU 2IL 2RI, **ZSs** 4IO 6AUD and **5A5TO.**

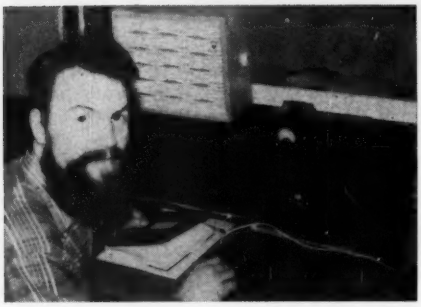
10 c.w. returns as a keen conversation piece among K2UYG, WA2FNA, W6HCS, W8IBX, W9MAK, EL4A and KP4KD who account for **CN8IF**, **CT1JY**, **CX2BT**, **DJ5MX**, **DM3KFE**, **EA6AM**, **FQ8HA**, Rathlin isle's recent **GB3RI**, **HK1FF**, **LU1s** ACF DEL, **OE5GA**, **OQ5RU**, **SP6LB**, **TI2WD**, **UA4IF**, **VKs** 2FU 9XK, **VQ4HT**, **VS5GS** (90) 1, **VU2JA**, **XE1s** AAI PJ, **YU3OV**, **ZC4FM**, **ZEs** 2JH 8JG, **ZL2AUM**, **ZSs** 1O 4CO 5JT 6ANN 6AVW, **4X4s** BR IH and **5A2CV.**

10 phone girds for the winter doldrums but K1IFJ, W4s IMG KCE/2, W5ERY, K5TER, W6NKE, K6CFJ, W8IBX and EL4A hang on tight for **CN8AX**, **CO2UP**, **CRs** 6CS 6LA 7IT, **CT1EY**, **CXs** 5BR 5JE 7CO, **FA9IU**, **HI8s** GA KHB, **HK7LX**, **HP3DA**, **HR3VM**, **KV4BT**, **KX6AF**, **OA4IA**, **OQs** 5KV ØPD, **PJ3s** AD (500) 19, AJ, **PY8MA**, **TI2OE**, **UB5EG**, **VPs** 2AR 2LO 4TS 5FP, **XW8AL**, **YN4CB** 23, **YO3ZA**, **YS1LA** (735) 22, **YV5s** AFH and AJK . . . . . W8IBX is moved to observe, "If DX stations would refuse to tune the bottom fifty kc. of the W/K phone subband there would not be such a mess there. Give the QRP gang around 28,550–28,650 kc. a chance, OMs." And now let's turn to the QSL situation, here, there, and every

Where:

Hereabouts — K2UYG reports: "Paid W2CTN a visit and was really amazed at his systematic approach to QSL tasks on behalf of overseas DX. Jack's wall is lined with clip boards, about thirty of 'em, holding logs from DX stations. He has innumerable stacks of fresh QSLs, printed at his own expense, plus drawers full of QSLs from hopeful DXers. He surely deserves a big hand for the job he's doing." May's "How's" and subsequent columns to date convey the full extent of W2CTN's clientele. *Don't* forget the self-addressed stamped envelopes when applying for his superb supererogations . . . . . K5LLJ recommends praise for our ARRL QSL Bureau men. "W5ADZ tells me he runs two complete clearings per month." . . . . . "HR3VM, whose home QTH is in Grand Rapids, Mich., mentioned that he will catch up on QSLs when he returns home." This from W6NKE who also submits, "YV5AJK declares he QSLs 100 per cent. His father won't let him get on the air until he has filled out and mailed all QSLs owed for contacts made the previous day." Great, dad! . . . . . W7QNI feels he may have missed dispatching an Oregon QSL or two and stands ready to make amends . . . . . "Have returned to Miami from W4GQM/KS4," pens the man himself. "About a third of those wishing QSLs as a result of my 600 contacts on Swan supplied stamps and/or envelopes. I suggest that *all* who want such DX QSLs be good enough to supply pasteboard transportation. I am QSLing 100 per cent but next time, no postage, no QSL. From this brief experience I sympathize with stations at the DX end!" . . . . . "HI8BE now is QRT," states W4BKZ/6. "Anyone still due a deserved QSL should send s.a.s.e. (s.a.e. with IRC if foreign), and a card will be sent after log check." Burke's Californin QTH follows . . . . . "Due to the limited demand for the Foreign Edition of the *Callbook*, as well as the high cost of printing and binding a small quantity, we have suspended publication of this section as a separate edition." That from the *Callbook*'s Miss M. E. Hirsch who further assures us that the foreign section will continue as part of the complete volume.

Asia — Regarding defunct club station YI2AM, G3KVX writes K2CQP: "I was secretary at YI2AM in 1954–'55 and held the call YI2RP for about four months. There is reason to believe the call YI2AM was pirated outside Iraq. I QSLd 100 per cent and I understand the YI2AM log now is held by G3JUL." . . . . . G2MI inherited the records of G3FYR/VS9–VS9AI and writes, "I have a large stock of VS9AI cards which will be used to confirm contacts made from 1956 through 1957. . . . If anyone needs a card he can send a QSL showing QSO details to my address." . . . . . From roaming MP4BBE: "I left Bahrain for Sumatra near the end of June '59 and at that time all cards received had been answered. I expect to leave my present temporary assignment in the East Indies around December, 1959, and then return to the U.K. for about five months leave, during which period I will answer all outstanding QSLs. Cards meanwhile sent to Bahrain will be forwarded to my England address [which follows]. As far as I can tell at present, I should be returning to Bahrain about May, 1960." . . . . . K2QXG, entangled in VS9MB QSL chores, informs: "I am trying hard to get log data for QSOs made prior to my taking over this job. VS9MB is a club station and each op handles his own cards. He may be transferred at any time, and then he takes his logs with him. I have been deluged with cards for QSOs of last spring when the station was particularly active. I wrote the present operator and he sent data on about ten contacts he had made." Matters are further complicated by the fact that several VS9MB operators dispatched bundles of QSLs to random Statesiders for forwarding; conclusions were naturally jumped at that this fellow and that fellow are "VS9MB QSL managers." Anyway, K2QXG has 500 Maldives blanks on hand and will do his best to clear up the confusion . . . . . W3KVQ hears that 4S7WP has shipped him a batch of overdue QSLs for U. S. amateurs. This, of course, does not automatically make Ed the one and only 4S7WP QSL agent but he hopes to work out something along this line. W3KVQ adds, "Please remind the boys once more of my QSL efforts in behalf of VU2RM and please, *please*, self-addressed stamped envelopes. It surely is amazing, the number of guys who expect me to shell out postage to send them cards direct. Another big problem in handling these DX QSLs is that so many of the gang still are looking for cards from 'way back before I took on the job. It's a rather thankless task, OM, but the occasional thank-you notes still give me a charge." W8DVY agrees, and observes that VS9ANS cards are emanating expeditiously from ISWL's bureau in London . . . . . ZC4CS joins that rambling roster of QSL-via-W2CTN lads . . . . . KA8KW, who closed down in September after a super-active DX career in the Orient, writes: "If I have missed any QSLs for the gang during my two years of operation I will gladly



LA2TD/p is no beatnik so far as we know—beaver styles are standard stuff up Svalbard way. Odd's favorite pad is 20 phone, like where you dig those mad pile-ups, man, when that mood moves in. *(Photo via W9WHM)*

send them QSLs if they will drop cards to my new Hawaii address [which follows]." . _ . _ . _ KH6BPF continues his QSL labors on 487YL's behalf and iterates the need for full QSO data and s.a.s.e. Recent happy recipients: Ws 1VAN and 4QT.

Africa — VQ4s CW and ERR of the Radio Society of East Africa communicate, "We shall be grateful if you will kindly insert in your periodical the following QSL bureau addresses which have recently been revised by this society: VQ3, P.O. Box 2387, Dar-es-Salaam, Tanganyika; VQ4, P.O. Box 30,077, Nairobi, Kenya; and VQ5, P.O. Box 1803, Kampala, Uganda. These are the correct and official addresses for RSEA Bureaus in East Africa. An entirely separate organization has recently been formed in Uganda and we understand that they are proposing to organize their own QSL bureau; this has nothing whatever to do with this society and we shall be grateful if you will make this point clear." . _ . _ . _ "Please inform the gang that all W/K/VE QSLs for ZE8JN will go through me. Those accompanied by self-addressed stamped envelopes will get priority and go direct. Others will eventually be sent out through appropriate bureaus. I'll be glad to clear QSLs for non-W/K/VEs as well but I primarily intend to handle ZE8JN's U. S. and Canadian cards." This from K5DCO . _ . _ . _ EA8BF tells W9WNV that QSLs for him should come direct . _ . _ . _ Since K4YJM's recent return to the States he has had difficulty locating his household goods and 5A1TK hamming records. "Upon arrival of said material all QSL debts will be promptly attended to. Sorry this has taken so long but I was packed and shipped in a hurry." . _ . _ . _ CN8GV (W3ZVT) rotates to England, writing, "Anyone who has worked me and has not yet obtained a confirmation should QSL to [the address following]. All cards received will be answered 100 per cent." Francis emphasizes that his CN8GV responsibilities extend only for the period September 1958 to September '59 . _ . _ . _ "ZS3T does not want cards sent to him direct, nor does he want IRCs," advises W1VG. "All QSLs for him should go through the bureau." . _ . _ . _ VQ8AD, new Mauritius QSL manager, writes: "The late Box 155 QSL Bureau address now is canceled. I will handle all QSLs addressed to VQ8 stations, VQ8AF having turned the managership over to me." Paul's Port Louis QTH follows . _ . _ . _ Circumscribing the scope of an August item, 5A5TF declares that he and 5As 3TQ and 5TO can only be responsible for their own QSL debts. They'll QSL 100-per on valid cards received, all via QSL bureaus unless accompanied by IRCs. "There are about thirty licensed hams working out of Tripoli, several in Tobruk and a few more in Benghazi. There are Libyans, British, Canadian, Italian and American personnel, civilian and military. Many of these have worked all States, no longer care to receive cards and feel no obligation to QSL. . . . We feel that many hams in the U. S. fail to take advantage of the fact that they have QSL managers and do not keep them supplied with self-addressed stamped envelopes for regular receipt of cards. Knowledge and adherence to this procedure probably would end much of the worrying about where those rare QSLs are. One more item on the subject — *use GMT*." . _ . _ . _ ZD6NJ apprises K6LAE, "ZD6FX is unknown in these parts. Only ops at this time are ZD6s DT FC JC RM and myself." . _ . _ . _ OQ5BC becomes another whose QSL burden is to be lightened by W2CTN, the usual s.a.s.e. required . _ . _ . _ "My QSL returns are getting a little better now. ISWL and RSGB are doing a fine job. Considerable overseas mail continues to go astray, however, so if at first you don't get your deserved QSL from this part of the world, try again. It's very often *not* the fault of the amateur at the DX end." That quote from EL4A.

Europe — W4TAJ, seconded by listeners L. Waite and A. Rugg, tells a frustrating tale: "Some time ago I agreed to handle all QSLs for DL4LS's SVØWT/Crete operation. He was to send me logs and I was to do the rest. This was all very fine with me and still is — except for the fact that I have never received the first log from SVØWT/Crete, not so much as a post card in seven months. Therefore, a public apology to all hams who sent cards which are still reposing on my desk. There are too many to answer in person. If anyone wishes to have another try at QSL from SVØWT/Crete, I suggest he address inquiries to M/Sgt. E. Helms, 6900th Security Wing, Box 9, APO 757, New York, N. Y." For one reason or another these situations do come about from time to time and there's not much to be gained in recriminations. W4TAJ's unfortunate episode does serve to illustrate what possible pitfalls await even the best-intentioned Samaritan . _ . _ . _ LA3SG/p writes W1VG, "Thank you very much for your QSL which was dropped by a U. S. Navy plane on Sunday. We get post every third week in this way. Tell the gang that envelopes are much appreciated with QSLs because the nearest stores are home in Norway." And that's a good DX hop from Jan Mayen. LA4PF/p, erstwhile Hopen Islander, tells WG1DXC he's back in Norway clearing up QSL debits with utmost speed . _ . _ . _ K6MPJ desires it be stressed that CS3AC closed operations in '57 and that the prefix is no longer valid. A recent influx of QSLs for this call has embarrassed Yanks stationed in the Azores, doubtless indicating pirate use of the call elsewhere . _ . _ . _ NC1DXC suggests s.a.e. to W6QFE if you would speed your overdue OZ3EA s.s.b. verification.

Oceania — W3AFM discloses, "The calls KC6ZZ and KC6AT both were legally assigned by Trust Territory officials. The first was temporary, and was used only from July 1 to July 16, 1959. The formal assignment of KC6AT was received on July 17th and was used until July 22nd

As distinctive as his hamshack is a ham's skywire-filled back yard. From left to right we inspect the coral-based environment of K6QPG/KW6, the lofty grandeur of HB9TC's favorite Liechtenstein (HB1TC/fl) retreat, the bleak Labrador outpost of VO2AZ, and the fertile Iloilo lowlands surrounding DU6RG. *(Photos via W1PH and DU7SV)*

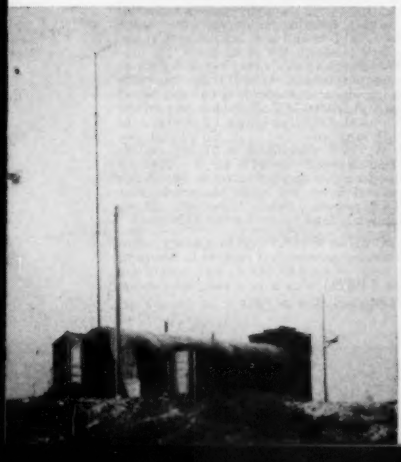
when I left Ponape for the U. S. As of mid-September all QSLs were answered except a few foreign cards and a few not yet identified. Some observations made in my first experience as DX: (1) In a busy log it's hard to find QSOs if the dates and times on QSLs are not accurate. I don't mean that five minutes difference is important, but errors of up to a week occurred several times. (2) The use of GMT facilitates reference; however, about ten per cent of all QSLers miscalculated GMT. One interesting misuse, for example, is 'July 3, 2447 GMT,' meant to be July 4, 0047 GMT. (3) It's a nice touch, when QSLing to stations in humid places, to put waxed paper under gummed surfaces. This applies to stamps as well as the flaps of self-addressed envelopes. Less than one per cent of all QSLers did this." . . . . . K2IEF tracked down KS6AG to her present California location (see following) and observes, "From the note on her card it seems that some of her mail has been delayed." . . . . . Now to some specific items presumably previously unpublished here or in the *Callbook*, addresses obviously neither necessarily accurate nor "official." Good luck! . . .

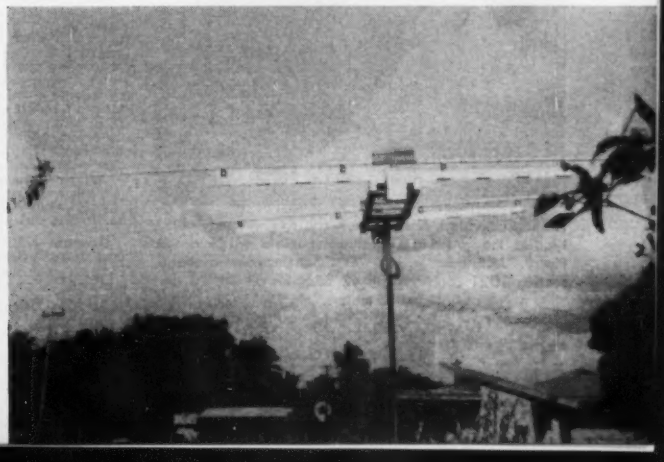
CE1DN, P.O. Box 1, Iqueque, Chile
CE9s AK AL (via CE3HK)
CE9AS, U. Duran, Calle Sta. Isabel nr. 323, Casa nr. 27, Santiago, Chile
ex-CN8FQ-3A2CD (to W4UFQ)
ex-CN8GV, F. J. Soxman, 603rd Comm. Sqdn., APO 125, New York, N. Y. (or to W3ZVT)
CN8JF (via W8UWT)
CN8JN (via W7GGO)
CO2JK, J. Berndes, P.O. Box 500, Havana, Cuba
DL5BY (via REF)
DU1FM, F. Martinez, Box 770, Manila, P. I.
EA9IA (to EA3GF)
F7CZ (to W1HRE)
FA2TW, R. Chuet, Secteur Postal 87, .866/AFN, Algiers, Algeria
FP8BG (to VE2ABE)
FP8YL (to WA2AJJ)
FQ8AJ, J. Franco, Box 2023, Brazzaville, F.E.A.
FQ8AZ, P.O. Box 898, Brazzaville, F.E.A.
GB3RI (to GI3HXV)
HH9DS (via RCH)
ex-HI8BE, B. Edwards, W4BKZ/6, 1262 Leafwood Dr., Novato, California
HR1HP, c/o U. S. Embassy, Tegucigalpa, Honduras
JA1ZR (via JARL)
K1LHJ/mm, USCGC *Eastwind* (WAGB-279), FPO, New York, N. Y.
ex-KA8KW, Col. J. Branch, 6920th Security Wing, USAF, APO 915, San Francisco, Calif.
KG6SA, USCG Loran Stn., Navy 935, Box 338, FPO, San Francisco, Calif.
KR6MG (via OARC)
ex-KS6AG (to WA6FRU)
LA1NG/p, c/o Norwegian Embassy, Reykjavik, Iceland
LA2TD/p (to LA2TD)
LA3SG/p, c/o Norwegian Embassy, Reykjavik, Iceland
MP4BBE, J. A. St. Leger, c/o Chancel End, Blythburgh, Halesworth, Suffolk, England
OA4IH, B. Ivanoff, P.O. Box 4373, Lima, Peru
OQ5BC (via W2CTN)
PX1CH (via W6AWT)
PX1PA, A. Peleijs, Bartolomo, Andorra
PY2ON, Box 4283, Sao Paulo, Brazil
PY8YW, O. F. dos Santos, Box 84, Porto Velho, Rondonia, Brazil
SM5AUE, H. Johansson, Olaus Magnus vag 23, Stockholm, Sweden
SV0WT/Crete (see text preceding)
UB5KIA, Polytechnic Institute of Communications, Ulitsa Leontovicha, Kiev 30, Ukrainian S.S.R.
ex-VE3EGD/SU (to VE3EGD)
VE9NG (via W1DGL)
VK9DH, D. Hallam, Box 55, Rabaul, New Britain, T.N.G.
ex-VK9JF (to 9M2JF via MARTS)
VP1SS, R. Squires, c/o P.O., Belize, Br. Honduras
VP4WD, Hotel Crusoe, Tobago, B.W.I.
VP5CB, W. Clardy, MCB No. 7, FPO, New York, N. Y.
VQ1s HE TW (via RSEA VQ8 bureau as in preceding text)
VQ6LQ (via K6KII for QSOs after July 20, 1959)
VQ8AD, P. Caboche, Box 467, Port Louis, Mauritius
VQ8BA (via VQ8AD)
VS1GL (via W6BAF)
VS1KN, V. Stagg, 82 Fidelio St., Opera Estate, Singapore
VS5BY, B. Young, BSP Co., Ltd., Seria, Brunei
VS5PM, P. Mohamed, Telecoms Dept., Seria, Brunei
ex-VS9AS-G3FYR/VS9 (via G2MI)
VS9AZA, P.O. Box 130, Mukalla, Quati, c/o Aden P.O., Aden
VU2CE, A. Venkatesan, Police Radio Office, Madras 4, India
XE0BGS (to W9IU)
YA1AO (to DL6YI)
ex-YI2RP (to G3KVX)
ZC4CS (via W2CTN)
ZC4KV (to G3KVX)
ZD2VPF, E. Forbes, c/o WAAC Opns., Ikeja, Lagos, Nigeria
ZD6JC, D. Driver, Married Qtrs. 62, Cobbe Bks., Zomba, Nyasaland
ZE8JN (via K5DCO)
3A2AE (via RSGB)
ex-5A1TK (to K4YJM)
9M2GL, I. bin Zainuddin, 203 Creagh Rd., Assam Kumbang, Taiping, Malaya

A tip of the "How's" hat to W1s DGT FYF ODW VG, K1IFJ, W2KIR, K2s CQP IEF JLD UYG, K3CUI, W4s IUO TK, K4IGD, W5CPW, K5s JVF LLJ, TER, W6KG, K6s CJF LAE, W7s DJU LZF OEB, K7AGJ, W8s DVY KML KX, KN8NHC, W9s JJN MAK WNV, K9ELT, KØJPJ/Ø, listeners D. Claunch, C. Morrow, A. Rugg, L. Waite, ZE1JE, Hamfesters Radio Club (Chicago), International Radio Listeners League, Japan DX Club, Malaya Amateur Radio Transmitting Society, Newark News Radio Club, Northern California DX Club, Ohio Valley Amateur Radio Association, Southern California DX Club, Universal Radio DX Club, Holland's VERON society, West Gulf DX Club and W9-DXCC's group — without whose generous contributions of data *you*, OM Reader, would draw a complete blank in this segment of your monthly *QST* DX pages.

Whence:

Europe — How's your "G" appeal, DROM? "Radio amateurs throughout the world are again invited to take part in the popular RSGB 21/28-Mc. Telephony Contest," informs the British society. "The rules are the same as in previous years, and the attention of overseas contestants is drawn to the bonus for working each additional ten G3 stations irrespective of band." DXers world wide will pursue G GC GD GI GM and GW (possibly with a GB or two tossed in) brethren in this fourth annual of the series, an affair which runs from 0700 GMT, the 21st of November, to 1900 on the 22nd. Prime requirements are that one must be single-operator on 10- and 15-meter phone and exchange RS-plus-QSO-number serials (47001, 58002, etc.) with the G chaps. Each completed contact with a British Isles station scores five points; in addition, a bonus of 50 points can be claimed for the initial QSO with each numerical prefix — G2 G3 G4 G5 G6 G8 GC2 GC3, etc. — and a further 50-point bonus is earned for each additional ten G3s worked as heretofore mentioned. Entries must (a) be clearly written or typed on one side of each sheet; (b) show date, band, GMT, call of station worked, exchanges sent and received, QSO and bonus points for each contact; (c) be addressed to the Contests Committee, RSGB, New Ruskin House, Little





A motley and unspectacular batch of QSLs, you say. Much to the contrary, we say. These confirmations represent intercontinental transoceanic QSOs with ZL3RB on 160 meters, and if you think *that's* easy, try it yourself. *(Photo via W1BB)*

Russell St., London, W.C. 1, England, postmarked no later than December 7, 1959; and (d) be accompanied by the signed statement, "I declare that this station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council of the RSGB shall be final in all cases of dispute. I certify that the maximum input to the final stage of the transmitter was — watts." Certifications of performance will be available to country leaders and top scorers in VE VK ZL and ZS call areas. Aye, lean DX years loom ahead for 10 and 15 meters as the sunspot count declines, so here's a timely chance to beef up the log while the beefing's good, lads . . . According to the daily press, UPOL6 is no more. A terse Tass dispatch states that the arctic ice island drifted to a point of negligible strategic scientific value, so the Russian base was dismantled and personnel removed . . . Sharp-eared K2MBX heard Radio Moscow disclose that Central Radio Club will hold its annual international c.w. competition on the 7th of next May . . . ON4KE, s.w.l. L. Vervoort and a skydriving pal have fun on the Continent operating ON4KE/am aloft and afar . . . LA3SG/p writes W1VG, "LA1NG/p and I are regularly on the air between 2230 and 0000 GMT, the only time we have a.c. voltage. You will often find me around 14,050 kc." . . . That Bordeaux Wine Contest mentioned in June "How's" sees Ws 6MVL ØLMA ØIDWS ØSFU ØYLZ 4LRN 4NTU 8KPL 8RTC and K8AJL the top ten scorers in that order, statistics courtesy F2MB and W1BDI . . . OY7ML indicates he's about set for some serious DX doings with his new 811s linear, 14-Mc. s.s.b. preferred . . . "G8DL appears to be out after WAS with a fearless 7-watter," observes KØJPJ . . . W1DX, attending the Maritimes Convention over Labor Day, reports that the VE DX gang would appreciate less W/K harrassment during RSGB's annual BERU Test. This one's for British Empire Radio Union members in the Commonwealth only, not too much unlike our own Sweepstakes, so kindly cease and desist even though you badly need those VS8s and ZC9s . . . SVØWAC (K2MRF) entertained the RAAG (Greece) gang at his Athens quarters in July. SV1s AA AC AD AE AG AI AJ AK and AM squeezed in, accounting for all but two of the entire SV1 population. "Most of them work 20, 15 and 10 DX with powers ranging from 25 to 150 watts." . . . DL1BO verges on one of those tricky "DXCC²" filings, with an over-all DX tally of 256/241. Theodor would appreciate word on the current whereabouts of ET3s LA (1955), R ('52) and PK1HX ('50) . . . K6STI is assembling data on Russia's amateur work in Antarctica and will be grateful for any stray information concerning UA1s KAE KAE/6 KAE/7, etc. . . . On behalf of OE6TJ, W7LZF redirects your attention to the "808 Childrens Villages" certification briefed on p. 88, June *QST* . . . Two other diplomas available to world-wide DX hounds: (1) Hungary's Central Radio Club offers WHD certifications (Worked Hungarian Districts) for which W/K/VE/VOs are required to tender a statement (no QSLs necessary) of contacts with at least five HA call areas since January 1, 1958, phone or c.w., together with your own QSLs for those stations and five IRCs. But first we suggest you check for full details from CCHRA, P.O. Box 185, Budapest 4, Hungary. (2) OVSV (Austria) makes available its WAOE (Worked All OE) to those non-European amateurs who garner and submit 24 QSLs, three from each of eight OE call areas. "OE4 and OE9 are considered a single call district, there being but two resident amateurs in Burgenland." Contacts for this one must date on or after January 1, 1957, and further data can be secured from OE1FF. By the way, new OVSV officers are OE3RD, pres.; OE1FF, v.p.; OE8KI, 2nd v.p.; OE1SY, treas.; OE1NP, organ editor; and OE1WJ, v.h.f. activities mgr. . . . K2UYG records, "HB1TC/ti made many summer QSOs from rare Tessin canton with a potent 10-watter on 20 c.w." Bill also notes that UA3KKB's Okeant is a candidate for your global YL QSO collection.

Asia — A few Middle Eastern Areas still suffer hamming taboos. K9ACH writes from Turkey: "There is no permission for private ownership of transmitters here. However, a friend and I have built a small station for the benefit of our Navy and Air Force site. We are stereophonic on 1440 and 670 kc. with a frequency response from 12 to 12,000 c.p.s. and have intentions of trying closed-circuit TV." Ken also does quite a bit of ham-band monitoring. The status of K4BJP/TA3, 14,300-kc. s.s.b. and supposedly located sixty miles west of Istanbul, further complicates matters . . . "There is no ham activity in Iraq at present," writes G3KVX (ex-YI2RP) to K2CQP. "YI2AM went QRT over a year ago and the recent YI2DT was probably phony or working under cover." . . . From MP4BBE: "I expect to leave my temporary assignment in Sumatra in December, and under no circumstances should any mail be addressed to me here. There is no chance whatever of obtaining a transmitting license in Sumatra." Time to remind you, also, that Cambodia, Iran and Vietnam remain on the ITU-FCC Ban List; stations signing EP EQ PK XV YB YH and 3W prefixes have no business doing so and should be ignored . . . Aw, enough accentuation of the negative. Ceylon's ham radio continues to florish after a temporary prohibition early this year. W3KVQ learns that 4S7WP has a brand new XYL and is rebuilding for return to the air. Shanthi's father-in-law is 4S7VS . . . "Sure want to thank all the world-wide gang for their many kindnesses and particularly the U. S. crew for their patience and many swell QSOs," applauds KA8KW, now rotating to Hawaii. "Operated mainly 14-Mc. c.w. in Japan but I fiddled a little on 15-meter c.w. and phone, too. Fifteen and ten meters were never consistent here so I concentrated on 14 Mc. Never used more than 150 wattsinput at any time and my antenna was a dipole made of Japanese curtain rod. I'll fire up the rig again as soon as I get settled in Hawaii at Wheeler AFB near Honolulu." . . . W8KX notes W6DUW's stint as operator at BV1US, and W4MZP finds BV1USB still yearning for a South Carolina QSO — WAS, you know . . . KP4KD checked his files to establish VU2JA as his most-worked Asian with 36 c.w. contacts on 14, 21 and 28 Mc. Ev has worked 4X4RE on 80, 40, 20, 15 and 10 meters.

FP8BF, activated this summer by K4RSD and party, typifies the growing DXpeditioner-tourist trade on St. Pierre. Jeff managed a 21-QSO-per-hour average, scoring 1021 contacts with 42 countries on 40, 20 and 15 meters.

Africa — Liberian communique from EL4A: "My station location is Tournata on Baffu Bay about 150 miles southeast of Monrovia where we have a corner on the EL4 prefix. Made only 266 DX QSOs in August, down from a May high of 1200. Will get back on the upswing now, although there are many temptations to keep one out of the ham shack here. Just 100 yards from the rig is a beautiful beach. With warm breezes, swaying palms, etc., who wants to sweat out pile-ups — hi! I've had gear breakdowns twice, and each time it's a little harder to get going again. No supply of spare parts. We improvise temporary measures which automatically become permanent. When I get my new 60-ft.-high quad going on a homemade iron and wood tower I'll be QRV daily at 0600 GMT off the low edge of the U. S. 20-meter phone band. On other bands I'll continue to use a vertical or 500-ft. long-wire." . . . How tough can things get? It took W2GVZ nine hours of 21-Mc. calling over a three-day period to catch VQ9AIW for No. 254. We wonder how many other guys battled in those Seychelles pile-ups even longer and never did make the grade. But WØAIW and VQ4ERR put on a dandy show with all the facilities at their command. A warm-up for the Aldabras?

Oceania — VR6TC writes W4TAJ that he's now a radioman aboard a British merchantman but expects to return to Pitcairn early next year. Ws 4TAJ 5OLG and others are arranging to provide VR6TC with a new receiver for the

(Continued on page 142)

Correspondence From Members-

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

VISIT TO "BOX 88"

237 South Street
Newark 5, N. J.

Editor, *QST:*

Every visitor to Moscow is entitled to request Intourist permission to visit places of especial interest to him. Whether that permission is forthcoming is another matter.

When I arrived in Moscow by jet from Copenhagen, to which airport I had been driven by W6QFE, I indicated to the Intourist office that I would like to visit the Central Radio Club of Moscow, as an American amateur, and I would like to have an "eyeball QSO" with some of their members. This phrase really had the interpreters stumped, but I was finally able to make my wishes clear.

On my last day in the city, when I returned to my hotel late in the afternoon after another gruelling sightseeing session, I was informed that at 8:30 P.M. a member of the Radio Club would meet me in the hotel lobby.

I was elated that at least one of my requests was to be granted, and armed with my QSL card and the June issue of *QST*, promptly at 8:30 I went to the lobby. The receptionist beckoned me to her desk, and instructed me to go to Parlor B, just off the lobby entrance. All Russian hotels have numerous small rooms, much like conference rooms, where visiting dignitaries from Outer Mongolia, and perhaps Outer Space, are entertained.

Not knowing what to expect, I walked to the designated room, parted the heavy oriental drapes, and was greeted by not one, but four well-dressed, smiling persons. The spokesman and interpreter for the group was Miss Ida Goldberg, QSL Manager for the Central Radio Club. She introduced me to Ernst Krenkel, RAEM; Alex Rekach UA3DQ, and U. Demjanov, who, as general manager of the club, operates UA3KAB, the club's station.

For several hours, there followed as spirited a discussion as it is possible for four people to have talking through an interpreter. Miss Goldberg briefed me on the background of Ernst Krenkel, who has the unusual call RAEM. This was the call of the Russian ice-breaker *CHELUSKIN*, on which Ernst was the chief op. The ship was smashed and lost in the Polar sea in 1934, and he was awarded the Soviet Union's highest honor for staying with the ship sending out distress calls until she sank. Since that time RAEM has been his personal call.

We traded information on requirements for licenses and I learned that theirs are essentially the same as ours. Most of their equipment is of the home-brew variety, hence they were astounded to see what our manufacturers have to offer our hams. They were also amazed at the reasonable prices for equipment, as quoted in *QST*, for everything in Moscow is terribly expensive, with average ready-to-wear suits selling for $199.50 and shoes for $25.

They were thrilled at meeting their first American ham-on-the-foot, so to speak, and I of course was, too. They asked me to be sure to relay the information that any future U. S. winners of their DX contest would be the guests of the Central Radio Club of Moscow for the duration of their stay in the capital.

I saw much of interest in Moscow, but it was highlighted by this meeting with the genial Russian hams, who feel, as I do, that a better understanding of our peoples and our problems can and must be brought about through the medium of increased QSOs.

I left with the feeling that if the relationship between the leaders of our two countries could be elevated to the same high level as ours in Moscow, international tensions would cease to exist.

— *Donald C. Stone, WA2EDV*

STATUS QUO?

1830 Patton Dr.
Eastpoint, Ga.

Editor, *QST:*

In regard to K9EZD's suggestion of making General Class licenses not renewable after 5 years: I'm against it. Good grief — it took a lot of studying to pass the general theory. I'm only a teenager like many of the other boys on the air today. Sure, there are a lot of guys who could do it, but that is making it awful hard on a fellow to learn all of that theory. I think the licenses are just perfect as they are. If the fellows who have an amateur Extra Class ticket want people to know it, put some other letter in their call. I know they deserve recognition but there is no use of making it that hard to keep a ticket.

— *J. D. Cochrane, K4YBS*

RFD
Ashton, Illinois

Editor, *QST:*

Before K9EZD radiates any more a.c. hum, he should take into consideration the fact that not all people live in Chicago; not everyone has access to "the educational facilities now available." Also, not many hams live a block away from an examining point where they can take an exam as often as they wish.

Furthermore, not everyone likes to pay the 4¢ sales tax and postage for matter necessary to obtain the Extra Class License. . . .

— *David F. Winter, W9HIS*

RECIPROCITY

741 Highland Avenue
Kenmore 3, New York

Editor, *QST:*

. . . It is refreshing to see that even some of the ARRL officials have changed their position and actually seem interested in promoting reciprocity of amateur radio licenses. You finally point out that the security risk, as well as many other minor excuses, are really only minor after all and should not prevent this country from extending the same courtesy to other countries that we have been receiving for years. Reciprocity is certainly a step in the right direction since it may help change the current pattern that is making it increasingly difficult for the United States to develop pro-western friends throughout the world.

When our government finally does grant reciprocal licensing privileges to amateurs in other countries that come to visit or live with us, it will certainly go a long way towards promoting international goodwill and raising the badly faltering prestige of the United States.

. . . I would like to point out that the League and amateurs everywhere should do more than "continue chipping away at the subject" since it appears that we need a stick of dynamite instead of a chisel in order to secure the passage of so vital a change in the Communications Act of 1934.

— *J. Bruce Siff, W2GBX/K2ELE*

Twin Oaks
Whitewater, Wisconsin

Editor, *QST:*

Your recent editorial regarding the prohibition of aliens to hold an FCC license completely floored me. It is incomprehensible why any such restrictions exist. Considering the vital demand for electronics technicians in the United States, it is practically shutting the door on any alien who wishes to enter the United States and become a licensed technician.

— *Richard L. Butcher, W9CCO*

EXTENDED COVERAGE

2716 Ashbury Avenue
Evanston, Illinois

Editor, *QST:*

W2BIV, in his excellent article in September *QST* entitled "Apartment House Antenna Precautions", made one mis-statement which I am sure he would want corrected.

(*Continued on page 146*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
JOHN F. LINDHOLM, W1DGL, Communications Ass't.

ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

First 50-State WAS. May *QST* explained the WAS policy effective from the date of Hawaii's statehood; as of that date, August 21, 1959, we made available our new Operating Aid 8, the 50-state alphabetical WAS-record. There's a grace period to get those QSLs in by March 15th for those 49-staters who completed All States by August 21, 1959. Only applications based on 50 states will be acceptable thereafter.

We're already processing the 50-State WAS, however! We queried in May *QST* which applicant would be the first to present the necessary Hawaiian card representing a QSO for WAS following the Presidential proclamation of statehood. This was W6JPL, Whittier, Calif.; his first contact was on 14 Mc. s.s.b. with KH6BB on August 22nd 2020 HST.

For the Newcomer. WØUPT suggested some time ago the help newcomers in amateur radio may receive from putting on paper a "typical" QSO from beginning to end. Another idea is to have the newcomer set down some typical sentences, utilizing ham abbreviations (such as those on page 15 of Operating an Amateur Radio Station), so that those first QSOs in ham radio will go easier and not leave him speechless!

A.R.R.L. ACTIVITIES CALENDAR

Nov. 5: CP Qualifying Run — W6OWP
Nov. 7–8, 14–15: Sweepstakes Contest
Nov. 18: CP Qualifying Run — W1AW
Dec. 2: CP Qualifying Run — W6OWP
Dec. 17: CP Qualifying Run — W1AW
Jan. 7: CP Qualifying Run — W6OWP
Jan. 9–10: V.H.F. Sweepstakes
Jan. 15: CP Qualifying Run — W1AW
Jan. 16–17: CD Party (c.w.)
Jan. 23–24: CD Party (phone)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page of this *QST* in which more details appear.

Oct. 30–31: RTTY Sweepstakes, RTTY Society of Southern California (p. 68, last month).

Nov. 11–12: YLRL Anniversary Party (phone), YLRL (p. 94, last month).

Nov. 18–19: YLRL Anniversary Party (c.w.), YLRL (p. 94, last month).

Nov. 21–22: 21/28 Mc. Telephony Contest, RSGB (p. 69, this issue).

One amateur, looking back on his early work, wrote: "Amateurs are really nice to a beginner. . . . If I had set down in writing the answer to a call, a typical reply and the return, and suitable abbreviations to finish my QSO and give a final reply, friendly hams would not have had to take me in hand and advise the more accepted QSO procedure." Also if one wants to collect QSLs, he had better let the other fellow know he is starting in and give his address, including his last name and street number. He may want to use the Q signal for "send more slowly" when he first steps out in working faster operators. The best operators match their code speed to yours unconsciously making it a pleasure to copy and swap more than information in a set pattern.

Emergency Work a Success in Spite of Pitfalls. The Yellowstone Park 'quake (and attendant floods threatening in the area) called for radio standby facilities. WØIA writing for the Boulder (Colo.) Amateur Radio Club bulletin reports on these. WØURH and WØWUN found Idaho c.d. in contact with mobiles in the threatened area. W7OA, net control, with infinite patience and diplomacy, worked with K7GGV on the situation. He was hampered by the breaking in of operators consumed by curiosity but with little idea of rendering help. W7OA rates great credit for his arranging air evacuation of casualties. K7ICM was weak with skip conditions on 7295 kc. requiring relays.

Two *helpful* operator types were named RELIABLE ROGER and SILENT SID by WØIA in his account! R.R. checked in during slack periods, offered services, and remained quiet, transmitting *only* when called by the NCS. S.S. *listened*, decided he could not then help, so guarded the frequency as much as possible.

The club's bulletin also gave typifying names to the operators whose attitudes and actions hindered rather than helped. Some persons described may be identifiable to those in the know. To help readers recognize practices to shun, let us note some of the personnel whose acts were deplored, just as they are named in this report. (1) INQUISITIVE IKES numbered some two dozen. Instead of listening, they broke in wanting to know "what's up?" No help from this type. (2) CO-OPERATIVE CHARLEY probably had good intentions. Through lack of training or perception of the basic needs, his efforts stressed willingness to handle morale traffic, often to distant points. (3) NEWSHAWK NED, a wishful

"local hero" type, would break each few minutes to demand latest information "so he could keep the local broadcast station informed." (4) RELAYING RODNEY, described by WØIA as "puffed up like a pouter pigeon," was a break-in fellow proposing unrequested relays. Can someone say why such operators *always* assume the NCS *never* hears stations it calls? (5) Let us not forget SELFISH SAM and DEMANDING DAN. Sam (Utah) owned a cabin and insisted on finding out if it were O.K., placing his interest ahead of even getting out trapped and injured people. Dan undertook to locate a motorist some 200 miles out of the area and had to be told to put such requests through State Police channels. May you, wishing to help in another such emergency, *not* fall into these same mistakes. Aim at the performance of SILENT SID OR RELIABLE ROGER on those occasions that count. Be identified with AREC/RACES programs and the nets that represent our best in Amateur Service.

Courtesy in DX Operation, $\overline{KN}$ and $\overline{SK}$. "The lack of courtesy, especially from W/K's is a complaint I hear from most of the DX stations I QSO. . . . I think we should all search our minds and find out if the result is worth the discourtesy . . . what a wonderful day it would be if we lived up to our standards. . . . I am a firm believer in the operating signs $\overline{KN}$ and $\overline{SK}$. $\overline{KN}$ requests *only* the called station to answer and *all* other stations to please stand by until the end of QSO, when $\overline{SK}$ is transmitted. If just those two signs were rigidly osberved by everyone the DX bands would be a pleasure to operate by DX and locals. The persistent ones go on a list that I consult, and I will not answer them under any conditions . . ." — *KM6BL.*

International friendships certainly envision two-way amateur communication freely conducted between all parties; contacts should not have to be confined to an exchange of signal reports and QSL cards, precious though these may be. Fortunately for the maintenance of international friendships, along with the briefer signal exchanges, the DX gang can be just as selective as individual operating taste requires. However, it's quite unnecessary to get on any DX station's "black list." Practice of a little decency, operating restraint, and patience will produce successful contacts in keeping with the highest traditions of sportsmanship and fraternalism.

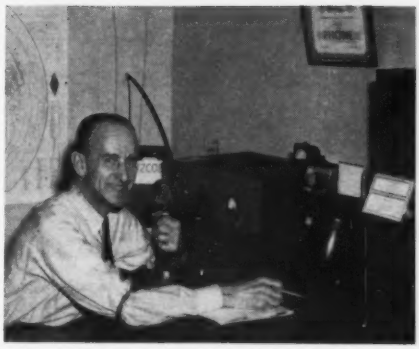
Newcomers are constantly asking some tips on how to behave. Operating Aid No. 5 on DX matters can be requested from ARRL. A brief recitation of principles is possible.

DX: You're sure to minimize QRM if you pick stations somewhat off your own frequency to answer. Preferably direct 'em to answer up or down from your own frequency and follow this stipulation firmly from there on in.

In Domestic Operation: Take your cue from the DX. Have and display patience and restraint. More listening, less calling, well timed calls. Short calls. *Call* DX only after he signs $\overline{SK}$ or following CQ, or QRZ? Or phone equivalents thereof. Unless you have a sked with things to go over, limit your exchange to reflect what is given out, in consideration of others.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.



Active CD Party man and avid traffic handler well describes W2COB. George is a consistently high scorer in phone CD Parties, former net manager of the New York State Phone Net, and holds OPS, WAC, OTC, RCC and numerous net and Public Service certificates.

That Little Extra Effort. "Many times I've listened on the net frequency a long time after being let out, or even after our net being closed. This sometimes results in being able to help out someone, or even save a day in the handling of certain traffic . . . In two and one half years on TEN (Tenth Regional Net) I've been able to assist in this way with the different states covered . . . too many operators have an almost automatic response 'can't handle, sorry, you'll have to hold.' On many occasions though, just a little time spent listening on the frequencies will find an outlet. When I control a net, I take a second standby if I have picked up a station or if interference is bad and it is necessary. *A little extra effort* is often the making of good public service, where doing things just in pure routine will fail. Procedure is a good tool of traffic handling, but the willingness to stick at the rig as long and hard as need be to see the communication through certainly is another! . . . One other thought, let's put an end to purely manufactured-at-home traffic points, and put the effort to originating messages that say something, so we really earn any points . . ." — *Les, WØSCT, PAM South Dakota.*

And Again the ARRL SS. November again marks the top contest of them all — Sweepstakes. For those seeking WAS this can be the chance to polish off the 50th. For one and all it's a chance to show what your station can do. This is the 26th running of our Sweepstakes, but it is radio operation and not a horserace — a chance to increase personal skill. Half the fun is meeting old friends and making new ones. See the complete announcement elsewhere in this issue. Don't miss out; CU in the SS. — *F. E. H.*

Award-seeking is getting to be a widespread pursuit in amateur radio. Two people at headquarters spend 100% of their time doing nothing else and several others are award-issuers on a part-time basis. A significant part of our correspondence deals with how to get this or that award, who issues it, what you have to do to get it. The demand grows, the mania increases and starts to make itself felt in nearly every amateur radio pursuit — in DX, in v.h.f., in RTTY, single sideband, c.w., phone. You'll have a hard time naming some phase of amateur radio in which there is not an award available for doing something in it.

Nothing wrong with this, of course. Awards as an incentive to accomplishment are a time-tested gimmick. The only time it gets to be wrong is when the award, rather than the accomplishment, is the end object — when the award becomes the end regardless of how obtained, when the *proving* of the accomplishment gets more important than the accomplishment itself. Are we approaching this state? Have we already arrived at it? Or have we been in this state for some time? Is your headquarters getting to be simply an award-administering and issuing organization? How many amateurs would stop working DX if there were no DXCC? How many would stop handling traffic if we did not have BPL listings, BPL certificates and BPL medallions? How many would stop taking part in emergency communications if they knew there would be no publicity, no praise, no Public Service Awards?

Ah! *That's* what we started out to talk about: Public Service Awards. The mails recently have started bringing us emergency "reports" which say something like this: "The following amateurs participated in the Podunk fire . . . ," followed by a long list of calls and nothing more. *What* Podunk fire? *When?* What did they do? Are these things important? Or should we just issue public service awards to them and never mind the details?

Or, maybe the letter will be a long commendation of some individual for his part in some emergency, full of details about what *he* did, but saying nothing about anything anyone else did or about the emergency situation in general. Many letters appear to have been written on the assumption that we are interested in giving credit to the individuals who performed, but that what was accomplished is of secondary importance.

Well, if we keep on griping, you fellows will probably soon stop sending in anything. We just want it understood that as far as emergency work is concerned the issuing of awards and the giving of individual recognition is secondary, and 'way down the priority list. Goodness knows we have (and love) our heroes in this phase of amateur activity, but primarily the recognition we want is for amateur radio as a public service, and that's what we work toward. We think this is best attained by teamwork, and that's what we try to emphasize in these columns. So let's stop drooling over those pieces of wallpaper and get on with the job.

—•••—

Minnesota SEC WØTUS was just leaving on a trip with his family when, on May 1, he was informed of a serious fire in the north central part of the state. The trip was cancelled, and WØTUS/m was at the scene of the fire by 1215. Contact was maintained on 3810 kc. with WØVPO, who kept landline contact with the fire service while WØTUS went on patrol. Other members of the KMG (Keep Minnesota Green) Net soon joined in: KØTIW, KØEWD, WØHEN, WØNNG and WØRHI. These stations reported on the progress of the fire to the Forest Service in St. Paul, the Keep Minnesota Green committee, radio stations and news media. At 1300, KØKAG/m joined WØTUS at the fire. At 1330 the wind shifted and walls of fire started rolling across highways 87 and 64. WØKAG/m and WØTUS/m, both perilously close to the raging fire, kept in touch with each other so that firefighting crews would know of the fire's progress, and so that each could get men out of the fire's path in case another shift of the wind should cut them off. Their efforts to halt the main fire by backfiring having failed, the problem of evacuation became important. Since WØTUS knew the area very well, he directed WØKAG in warning residents and arranging for evacuation. When it became known that several farms nearly cut off by the fire had not been warned, WØTUS/m raced to reach them ahead of the fire and was able to report residents leaving the area. In Backus, the school superintendent was warned to hold all school buses that would normally have come into the fire area — WØKAG/m to WØVPO. The power company supervisor requested communication with their substation at Riverton to shut off power over a H.T. line going through the fire, and this was quickly accomplished, WØKAG/m to WØTIW.

By this time the fire was 8 miles wide and three miles long. The following additional stations were assisting in the net: *KØs* LWK HIW, *WØs* VOA/m JHR TWG and OJG/m. Several other stations checked in to indicate their readiness to assist.

At 2300, the fire was finally brought under control. At 0100 the mobile patrol was suspended, and communications personnel assembled at WØTUS's home for sandwiches and coffee. The net was secured until 0700.

At 1000 on May 2 strong winds reactivated the fire and it jumped the fire break at one point. The net resumed operation with WØVPO as control, mobile *WØs* VOA and TUS on the fire line and *KØs* TIW HIW and WØNNG assisting with traffic. WØTUS/m patrolled all sides of the fire, and as a new fire would break out would inform WØVOA/m as to size, location and firefighting requirements. The latter would then inform the ranger in charge. Whenever equipment and personnel were made available by completion of a job, WØTUS/m would inform the ranger via WØVOA/m and it would be moved elsewhere. This saved the ranger considerable running around. The hourly weather report was furnished by WØLST. The net continued throughout the day, handling traffic in and out of the fire area until 2300, May 2. During this time *WØs* URI GII and DYD/m assisted with traffic. Sunday, May 3, found the fire under control, and after two more trips around the fire area, mobile *WØs* VOA and TUS returned home and the net was secured. An outstanding job of public service by Minnesota amateurs.

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On July 16 a construction crew accidentally severed a cable at the Des Moines, Iowa, municipal airport, cutting off all telephone service. An emergency call to the Polk County AREC brought KØGHD to the airport, where he made a quick 6-meter installation in the Weather Bureau offices. KØIXR made contact with Omaha and relayed weather reports to KØGHD; this contact was established at 1900. At 1930 contact was made on six meters with Cedar Rapids. These contacts provided weather reports until the telephone line was repaired at 2300. Assisting in Omaha were *WØs* VLI and YZV. KØCIG carried the load for Cedar Rapids. — *WØMJH, EC Polk County, Iowa.*

Shown operating the station set up at the Trumbull Memorial Hospital when telephone lines were cut on Aug. 12 are W8GGS (with mike) and W8KGD.
(Warren Tribune Chronicle photo.)

NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be *vacated immediately* to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: *c.w.* — 3535, 7050, 14,060; *phone* — 3765, 14,160, 28,250 kc.

On July 19, while KØDKA/m was returning from a transmitter hunt near Hampton, Iowa, an overturned car was spotted in the ditch, with two of the occupants struggling out. The mobile, in contact with WØCRG at the time, stopped to render aid. A third occupant of the wrecked car was found inside, unconscious. Via amateur radio, an ambulance and authorities were called to the scene and the families of the persons involved were notified. Emergency communication was carried out on 3970 kc., from 1600 to 1630. KØIJD and KØSOA were in the KØDKA/m car and a number of other mobiles, also returning from the transmitter hunt and listening on the frequency stopped to assist, including WØGGN, *KØs* SGD AJX and KNØUOO.

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Midwestern tornado conditions on Aug. 3 caused Minnesota SEC WØTUS to activate part of the section AREC. WØGII alerted the AREC in Red Lake County and WØTUS monitored 3820 as wind and lightning conditions permitted during the evening. After the storm subsided, a quick patrol located several broken electric lines which were sputtering and the electric company was notified. Later, KØWED at Camp Ripley was heard calling Kansas with emergency traffic. Fifty to sixty men had been injured at that location, and telephone and power lines were down. KØWED had traffic for families of some of the injured men. The Kansas Emergency Net frequency was used to try to locate Kansas stations. Other stations who reported into the net were dispatched to other frequencies and bands to try to locate Kansas stations. WØTUS acted as net control for this operation. KØGIW finally located KØTSX on 40, but he was unable to work on 75, so KØGIW and KØIRW took the traffic and went to forty meters with it. KØGLS and K9QYI engineered an s.s.b. route to Kansas a little later, and soon traffic was flowing into the state by three modes: c.w., a.m. and s.s.b. At 2330 direct contact was made with Wichita, and other stations in Minnesota joined in to assist in the relaying. At 0130 KØWED declared all traffic to have been cleared. WØTUS remained on frequency to clear and release stations, and succeeded in lining up another station in Wichita, WØCLN; traffic had to be relayed via K4VDQ in Tennessee. At 0230 WØTUS declared the emergency over. Other stations assisting, not previously mentioned, included *KØs* IAU EWC and WØKYG.

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The explosion and fire at Roseburg, Ore., on Aug. 7 brought the Douglas County AREC net into action. This net was activated by SEC W7UQI and EC K7BEV. K7BEV put his station on the air and was joined by *K7s* ICC CRF CRE BEW, *W7s* TUI SHA GBJ DFV and BWO. Continuous coverage was maintained for several days, until local telephone and telegraph coverage was restored. A total of 156 messages were handled, 75 verbal reports were made and 271 contacts were made by this network. Stations assisting from outside Roseburg were K7DON, *W7s* MW BXU QOZ and DIC.

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During the week end of August 8–9, a brush and forest fire threatened Ashland, Ore. W7VIL, EC for Jackson County, monitored the e.d. net on 147.06 Mc. Perceiving the need for communications assistance, a net was set up with mobiles on each band. Service was rendered to e.d. and other officials for three days as the fire burned and threatened the city. Stations reported as having participated were K7BUU, *W7s* VIL HLF BEG VPH MUS ULR LNG. — *W7JDX, SCM Oregon.*

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Thanks to an article in the *Honolulu Advertiser*, written by KH6BG, we have a concise account of participation by amateurs in Hurricane "Dot" on August 6–11, when the island of Kauai was isolated. The entire island suffered a complete loss of communications for several hours. Kauai hams handled traffic for civil defense, Red Cross, Police Department, county government and countless individuals. The radio network centered in Lihue e.d. headquarters, KH6CQD, which coordinated traffic among the various isolated communities and maintained communication with Honolulu. The calls of KH6OEL and KH6COL were also used. Others who volunteered many hours of duty were *KH6s* CQD LG CQF CKB CQJ AZG and DE. The 80 and 40 meter bands were used. Koloa was linked to Lihue via KH6BVM, assisted by *KH6s* BIB COD CBB and CQG. KH6ASX operated from Waimea High School, furnishing communication for that area with the help of *KH6s* CNP CNC SN and CTM. KH6AZG moved his mobile into Hanalei and served that area until a more permanent station was set up when KH6ASX, having terminated its service in Waimea, moved in. *KH6s* CQG and SN operated from Kaiaheo fire station until telephone service was restored there. KH6AED and KH6AAJ held down the Honolulu end. KH6DE, vacationing in Kauai, donated many hours of time and his extensive experience during the emergency. Personal safety, comfort and convenience were disregarded by this entire group of amateurs as necessary to get the necessary emergency communications job done. Other amateurs reported active: *KH6s* CQB CRP and DBB.

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Trumbull County, Ohio, amateurs set up a net to provide communications to and from Trumbull Memorial Hospital on Aug. 12 after a construction accident cut telephone service to the hospital and 3,000 telephones. Five stations were operated by eight amateurs in this emergency — at the hospital, at police radio headquarters, at the telephone company and at hams' homes. Operation continued from 1900 until 2330, when service was nearly back to normal. Amateurs participating: K8AZV, *W8s* KCE GGS FBE HSP HLA RZK and KGD.

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Once again the Cuyahoga County (Ohio) AREC was called upon to furnish communications in the search for a lost child. The scene of this search was a section of Cleveland's park system consisting of about 1,000 heavily wooded acres. Five amateurs responded to the call with a p.a. system, searchlights, four hand-carried units, three mobiles and a portable station, all radio equipment operating on six meters. Those in action were *W8s* AEU JBS QXG TFW and K8DXZ. — *W8AEU, EC Cuyahoga County, Ohio.*

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Twenty-five SEC reports were received for July AREC activities, representing 9266 AREC members. This is a big improvement over the same month last year — seven more SEC reports and over 4000 AREC members. Sections reporting: Wash., Tenn., N. Mex., E. Fla., Kans., Mich., N. Dak., Nevada, Utah, San Joaquin Valley, Ala., N. Texas, NYC-LI, Ga., Ind., Wyo., Ont., E. Pa., Maritime, E. Bay, Santa Clara Valley, Wis., Colo., W. N. Y., W. Va.

RACES News

On August 11–12–13, the United States Civil Defense Amateur Radio Alliance held a conference at Battle Creek Mich. You will remember USCDARA as the group which was responsible for obtaining additional RACES assignments within the amateur bands. This particular conference was attended, in addition to state delegates, by representatives of FCC, OCDM (national and regional levels) and the armed services — and ARRL, of course. We do not have details of the results as yet (we had to leave early to get to an ARRL convention), but one of the primary purposes of this conference was to consider the allocations of the new RACES segments. Mind you, USCDARA'S function is advisory, but most of the states have pledged themselves to go along with the majority, so

A typical committee meeting at the USCDARA (United States Civil Defense Amateur Radio Alliance) conference in Battle Creek, Mich., Aug. 11-12-13. After open session in which delegates and representatives are briefed on the problems to be met, committees such as this one are appointed by the chairman to tackle each problem, later to report to the conference with recommendations.

probably whatever plan comes out of committee and is ratified by a majority of the states will be adopted as the Alliance's plan. More later as we get the full dope.

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The little town of Maywood, N. J., has one of the oldest and most active RACES groups in the state. A group of 25 operators, most of whom are amateurs, meet on the first and third Wednesdays of each month in the RACES room in Borough Hall to participate in the Bergen County drill and conduct their own borough exercises. During the eight years of its existence, this group has contributed communications for civic functions at every opportunity as well as participated in communications emergencies.

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On Aug. 22 a group of Los Alamos (N.M.) RACES operators fanned out from Los Alamos to Raton Pass, Trinidad, Wolf Creed Pass and Alamosa in a test of coordinating their communications with existing facilities at relocation centers. W5NXE, Los Alamos communications Officer, was in charge of the operation. Nearly 25 amateurs participated in the test, which ran for 30 hours. — *WØKQD.*

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In Operation Alert, Milwaukee Metropolitan Target Area units operated on Friday and Saturday (April 17–18) with eleven southeastern Wisconsin counties linked on 2 and 6 meter f.m. and local Milwaukee County zones communicating on 2-meter a.m. and f.m. Two 2-meter RTTY nets were used. A 75-meter link was used to contact state control. In addition to fixed equipment, the City of Milwaukee operated a panel truck whose equipment included 2- and 6-meter f.m. gear and RTTY. Equipment operated by other public service agencies of the local government was also included in these vans.

This report, submitted by K9KJT, was received too late to be included in the OPAL writeup in Sept. *QST* and should be considered a supplement thereof.

BRIEF

Contest corrections: In the June V.H.F. Party K9FKL was incorrectly listed as K8KFL; in Northern New Jersey W2PEZ was a multiple-operator station; in the San Diego section K6IBY was a multiple-operator station; and W9YCR was incorrectly listed as W9VCR. Add KN2QBD to the 10-K list of the Novice Roundup Results. Sincere apologies.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made Nov. 18 at 2130 Eastern Standard Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted Nov. 5 at 2100 PST on 3500 and 7129 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 25 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m. you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EST. Approximately 10 minutes' practice is given at each speed. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with W1AW.

Date	Subject of Practice Text from September *QST*
Nov. 3:	*Apartment-House Antenna Precautions*, p. 18
Nov. 9:	*75 Watts Novice — 100 Watts General*, p. 11
Nov. 12:	*Converting a Guyed Tower to Tilt-Over*, p. 42
Nov. 16:	*A 40-Watt Transmitter for 220 Mc.*, p. 26
Nov. 24:	*The Story of VS5JA Brunei*, p. 54
Nov. 27:	*Geneva — 1959*, p. 58

W1AW GENERAL-CONTACT SCHEDULE

(Effective October 25, 1959)

W1AW welcomes calls from *any* amateur station. Starting October 25, W1AW will listen for calls in accordance with the following time-frequency chart:

EST	*Sunday*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
0020–0100 [1]	.....	.....	3555 [2]	7255	3555	7080 [2]	3945
0100–0200	.....	.....	14,280	14,100	3555	14,100	.....
0200–0300	.....	.....	7255	3945	7080	3945	7255
1500–1600	.....	.....	14,280	21/28 Mc.[3]	14,100	.....	.....
1600–1700	.....	14,280	21/28 Mc.[3]	14,100	21/28 Mc.[3]	21,330	.....
1700–1800	.....	14,100	14,280	21,075 [2]	14,280	14,100	.....
1930–2000	.....	7255	.....	7080	.....	7255	.....
2020–2100 [1]	.....	7080	3555	7080 [2]	3555 [2]	7080	.....
2110–2130 [1]	.....	3945	50.9 Mc.	145.6 Mc.	3945	3945	.....
2230–2330	.....	3555	3945	7080	1820	3555	.....
2340–2400 [1]	.... .	3945	14,280	3945	14,280	3945	.....

[1] General-contact period on stated frequency begins immediately following transmission of Official Bulletin which begins at 0000 and 2000 on c.w. and at 2100 and 2330 on phone. Starting time is approximate.

[2] W1AW will listen for Novices (on Novice band indicated) before looking over the band for other contacts.

[3] Operation will be conducted on one of the following frequencies: 21,075; 21,330; 28,080; 29,000 kc.

CODE PRACTICE STATION SCHEDULES SOLICITED

An early 1960 revision of our list of current on-the-air Code Practice Stations is contemplated. We invite all operators and stations that have participated in such work in the past, and any new operators or stations that might be interested, to drop us a line. We will send you form card CD-62 to fill out and return, to be placed in our files. A listing of stations will appear in a subsequent *QST*.

Please remember that in setting up a schedule you are assuming responsibility to follow this for a given or designated period of time. It takes us six to eight weeks after getting information together to get it in *QST* and suitably lithographed for distribution. Therefore, something that you can do only the next three or four weeks is not really suitable for listing; but if you can plan beyond that we very much want your schedule.

W1AW OPERATING SCHEDULE

(*Effective October 25, 1959*)

(*All times given are Eastern Standard Time*)

W1AW will return to its Fall-Winter operating schedule with the return to Standard Time. General operation covers all amateur bands on which W1AW has equipment. Novice periods include operation on 3.5, 7 and 21 Mc. (see footnote 2 in box on p. 76). Master schedules showing complete W1AW operation in EST, CST or PST will be sent to anyone on request.

Operating-Visiting Hours:

Monday through Friday: 1500–0300 (following day).

Saturday: 1900–0230 (Sunday).

Sunday: 1500–2230.

Exceptions: W1AW will be closed from 0300 Nov. 26 to 1500 Nov. 27 in observance of Thanksgiving Day, and from 0300 Dec. 25 to 1900 Dec. 26 in observance of Christmas.

A map showing how to get from main highways (or from Hq. office) to W1AW will be sent to amateurs advising their intention to visit the station.

General Operation: Use the chart (p. 76) for determining times during which W1AW engages in general operation on various frequencies, phone and c.w. Note that since the schedule is organized in EST, certain morning operating periods may fall on the evening of the previous days in western time zones. W1AW will participate in all official ARRL operating activities, using scheduled general operating periods for this purpose if necessary.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules:

Frequencies (kc.):

C.w.: 1820, 3555, 7080, 14,100, 21,075, 28,080, 50,900, 145,600.

Phone: 1820, 3945, 7255, 14,280, 21,330, 29,000, 50,900, 145,600.

Frequencies may vary slightly from round figures given; they are to assist in finding the W1AW signal, not for exact calibration purposes.

Times:

Sunday through Friday: 2000 by c.w., 2100 by phone.

Monday through Saturday: 2330 by phone, 2400 by c.w.

Code Proficiency Program: Practice transmissions are made on the above listed c.w. frequencies (except 1820 kc.) starting at 2130 daily. Speeds are 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday. Approximately ten minutes of practice is given at each speed. *Exceptions:* On Nov. 17 W1AW will transmit a special Frequency Measuring Test and on Nov. 18 and Dec. 17 W1AW will transmit ARRL Code Proficiency Qualifying Runs instead of the regular code practice.

TRAFFIC TOPICS

The midway point in the 1959 BPL race shows W3CUL leading the pack, with 266 BPL points. W2KEB is second, with 239. These two gals are far ahead of their nearest competitors, who follow in order: W7BA (155), WØBDR (142), WØLGG (103), K2UTV (97), W8UPH (91), W9NZZ (89), W7PGY (88), W5RCF and K6HLR (76). Note that three gals are in the high ten (actually eleven, because of the tie for tenth place). By call areas, the following are the leaders: K1BCS (68); W2KEB (239), with K2UTV (97) in second and K2SIL (55) third; W3CUL (266), with no competition in that call area; W4PL (67); W5RCF (76), with W5CEZ (37) second; K6HLR (76), with W6GYH (74) right on his heels; W7BA (155), with W7PGY (88) second and W7ZB (59) third; W8UPH (91), whose nearest competitor is W8DAE (39); W9NZZ (89), followed by W9DO (69); WØBDR (142) and WØLGG (103) followed by WØLCX (71). We have no record of any VE BPLs so far this year.

In the post-war race (i.e., since 1946), we find W3CUL still way out in front and likely to stay there for years to come. Mae has an accumulation of 4336 BPL points. Ol' Ben, W4PL is holding down second place with 1858. Following in order for the first ten are W7BA (1711), W2KEB (1615), WØBDR and WØSCA (a tie at 1576), W3WIQ (1184), W9NZZ (1146), WØCPI (1099) and W9JUJ (982). It takes about 8 years of steady traffic handling to get in the high ten in this column, so you newer traffic men relax. The above list doesn't change much, although those still active gradually climb the ladder to replace those now inactive.

The following have made BPL every month for the first six months of this year: K1BCS, K1CIF, W2KEB, K2UTV, W3CUL, K4QLG, W5RCF, W6EOT, W6GYH, K6HLR, K6YBV, W7BA, W7PGY, W7ZB, W8DAE, W8UPH, W9DO, W9IDA, W9NZZ, WØBDR, WØLCX, WØLGG.

Well, there you have it, the mid-year "iron man" summary. Our felicitations to all of you.

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The time: Aug. 30, 1959, 1025 EST. "K4SJH DE W4IYT R NR 1565 KR6MD WL CALL THIS IN RIGHT AWAY 73 . . ." Let's see, better check that phone number . . . just as I thought, wrong number . . . oh well, here goes . . . (ring ring) . . . "Hello, this is Andy Clark, an amateur radio operator in Miami Springs. I have a radio message from Korea for Mrs. Louis A. Jones, may I speak to her please?" "Just a minute, I'll call her . . ." "Hello, Mrs. Jones, this is Andy Clark in Miami Springs. I have an amateur radio message for you from 'Daddy' in Korea." "Oh, how wonderful!" "This message was sent from Korea on August 23rd and it says 'AM DEPARTING MIDNIGHT 23RD AUGUST WILL CALL FROM CALIFORNIA,' signed 'Daddy.'" "Oh, how nice it was of you to call me." "Not at all, Ma'am. Amateur radio operators deliver thousands of these messages free of charge daily as a public service." "Well, I certainly do appreicate your taking the trouble of calling me. Just a moment and I'll let 'Daddy' thank you too; he arrived home three days ago." A true story by Andy Clark, W4IYT — except the names, dates, places and text have been changed to protect both the innocent and the guilty.

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Net reports. Interstate Single Sideband Net had 31 sessions with 1020 check-ins, handled 223 messages. Hudson Traffic Net had 30 sessions, 284 check-ins, 117 messages. Earlybird Traffic Net reports 31 sessions, traffic total of 679. Transcontinental Phone Net racked up a traffic total of 879. The 7290 Traffic Net had 41 sessions, 1122 check-ins and handled 464 messages.

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National Traffic System. Now that Mexico has been added to the list of countries with which we can handle third party traffic, this makes a total of ten such countries: Canada (VE), Chile (CE), Costa Rica (TI), Cuba (CM/CO), Ecuador (HC), Liberia (EL), Mexico (XE), Nicaragua (YN), Panama (HP), and Peru (OA). The only one presently covered by the NTS is Canada, and possibly Panama (via Canal Zone). The others are not at present covered by NTS and, if the truth be known, were never intended to be.

Although we see no particular reason why NTS should feel obligated to handle traffic destined to these foreign countries, this still doesn't solve the troublesome problem of what to do with it. Of course you can always inform the originator that there is no known outlet and request permission to cancel. Just because we have permission to handle the traffic doesn't necessarily mean we *can* handle it. And goodness knows there is hardly enough of it to justify any attempts to set up daily schedules, so there should be and is no particular stigma in not being able to handle this traffic.

Former 2RN Manager K2RYH is active in the New York State Net, the Second Region Net and Eastern Area Net of NTS, and has been a regular NCS on all three. Note the compactness, neatness and convenience of his operating position (not to mention the careless way he dangles the headphones to charm the camera with his smile), typical of the better traffic man. *(Photo by K2UZJ).*

So, what about it? Should we set up for it? Can we get the foreign counterparts to handle it? Perhaps what we should have is an "International Corps" of NTS to handle all legal traffic for foreign countries, this corps to consist of both W-K/VE amateurs and amateurs of the "legal" countries, this group to have the responsibility of reporting into each area net to receive or transmit traffic to or from these countries. Naturally, schedules would have to be maintained; the possible exception to this is Mexico, which might report directly into TWN.

Well, it's something to think about. Much depends, of course, on the availability of foreign stations and their ability to handle the traffic they receive. And don't forget, also, that they can't handle just any kind of traffic, as we can. They have restrictions. It's probably a lot tougher proposition than it sounds. Anyone for trying it?

August reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation (%)*
1RN	30	609	.511	20.3	88.1[1]
3RN	62	414	.295	6.5	79.1
4RN	62	615	.292	9.9	59.2
RN5	62	1085	.438	15.8	59.2
RN6	61	1672	.444	27.4	94.3
RN7	62	692	.266	11.2	40.3
8RN	58	361	.203	6.5	87.9
9RN	59	1783	.770	30.2	83.9
TEN	62	1078	.546	17.4	66.5
TWN	26	414	.380	15.9	59.2[1]
EAN	27	1132	.768	41.9	99.4
CAN	31	1146	.741	36.9	97.8
Sections[2]	718	5782		7.8	
TCC Eastern	44[3]	170			
TCC Central	62[3]	1368			
TCC Pacific	115[3]	1446			
Summary	1320	19767	9RN	12.7	EAN
Record	1255	15277	.895	14.8	100.0
Late reports (July):					
CAN	31	1400	.928	45.1	95.7
Sections[2]	435	2471			
TCC Pacific	96[3]	1001			
Summary[4]	1710	20350	CAN	10.6	2RN
Record	1551	21316	.928	12.3	100.0

[1] Region net representation based on one session per night. Others are based on two or more sessions.

[2] Sections nets reporting: Aug. — KYN, MKPN, KNN (Ky.); MPN Evening, MPN Noon, MSN (Minn.); SCN (S. C.); WVN (W. Va.); OQN (Ont.-Que.); Tenn. CW; NJN (N. J.); ILN (Ill.); FMTN, FPTN, GSS, NWFN (Fla.); CN, CPN (Conn.); HNN (Colo.); WIN, WSS (Wis.); Iowa 75 Phone; S. Dak. CW, S. Dak. 75 Phone, S. Dak. 40 Phone; SCN (Calif.); GSN (Ga.); Beehive (Utah). July (received after Aug. 10) — NJN (N. J.); ILN (Ill.); WVN (W. Va.); OQN (Ont.-Que.); WIN, WSSN (Wis.); CN, CPN (Conn.); KSN, KPN, KYN (Ky.); Tenn. CW; SCN (S. C.); QKS (Kans.). Other section nets reporting for July are listed in October *QST*.

[3] TCC functions, not counted as net sessions.

[4] Corrected summary for July, taking into account late reports received.

Some hurried arithmetic involved in the above. We hope it is correct. If anyone has been left out, we're sure you will let us know. It all adds up to this: NTS had its best summer ever, and the coming "active" season promises to be a real whopper. While this is good, it also promises more work for all of us, unless we can get some new recruits. Recruiting is something that must be continuous, as turnover in NTS, especially in leadership posts, is high. We all realize that if it weren't for a few stalwarts who knock themselves out month after month, our NTS wouldn't be what it is. As the phone nets get into shape to take over some of the local work, let's get these c.w. men to the longer-haul echelons where they are most needed, and let's keep after these young fellows to get started in ham radio right — handling traffic.

The First Region Net had a fine meeting at the New England Division Convention over Labor Day week end, and is going to have another try at establishing a late session. Members of 2RN are highly incensed at inactivity on the part of their net manager; K2UTV is temporarily acting until something can be done about it. School is taking some of the young blood away from 3RN, but the overall picture is still satisfactory. W5RCF has found it necessary to resign as RN5 manager; K5QNF is acting manager. K6HLR puts out a very neat summary sheet and bulletin for RN6 once a month. TEN started a third session, at 1700 CST, on October 1. W5DWB finds that he is unable to continue as TWN manager; the Pacific Area Staff will recommend a successor soon.

The boys in the midwest are still talking about the fine traffic meeting we had at the Central-Midwest Division Convention in St. Louis last summer. Russ, WØBDR, our TCC Central director, was in charge, and W1NJM had the honor of introducing everybody and making wise cracks in between speakers. The place was full of RMs, PAMs, SECs, SCMs, ARRL Directors and various and sundry assorted net managers, and the whole time was devoted to discussion of NTS and related matters. CAN Manager W9DO and 9RN Manager W9ZYK were there, and W4OGG represented RN5 and WØLCX represented TEN. It was like pulling teeth to get these bashful guys to get up and say something to the crowd, but once they got started we couldn't turn them off. We'd like to see more and bigger such meetings at conventions; it was a real pleasure.

We should also mention that prior to the above, the Northern California Traffic Assn. threw a special meeting in Palo Alto at which ten were expected but 23 attended. This made the little room a bit crowded, but it was chummier that way, and we had a real lively discussion. As in St. Louis, the majority of those attending held leadership appointments and were active in NTS.

When discussion waxes argumentative at these meetings, this is not necessarily an indication of dissatisfaction or disorganization. More often it indicates interest and enthusiasm. Such was the case in both these meetings. We know there is much feeling that NTS leadership moves too slowly, too carefully, too ponderously, and that sometimes it appears that we vacillate while the situation deteriorates. Actually, although it is true that some of us don't move with lightning speed, the appearance of ponderosity and vacillation may be attributed to a combination of two things. First, preoccupation with other matters, and coupled with this an unwillingness to take action without thorough consideration of all the factors involved. Even without the preoccupation, basic changes in NTS would be slow in the making. With it, the slowness is even slower. So bear with us, gang. You don't change things just because a relatively small group thinks it would be desirable. You take time to stop and think about it, to study its probable overall effect, and often you have to wait until you *have* time to do this.

Transcontinental Corps. August reports.

Area	*Functions*	*%Successful*	*Traffic*	*Out-of-Net Traffic*
Eastern	44	81.8	800	170
Central	62	93.5	1627	1368
Pacific	115	91.3	2907	1446
Summary	221	90.0	5334	2984

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for August traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3CUL	275	2592	2201	304	5372
K2UTV	492	1856	1691	122	4161
W2KEB	349	1466	1181	443	3439
K9AIR	16	1330	1071	145	2562
W8UPH	30	807	737	68	1642
W8ZJB	65	845	684	22	1616
W7BA	18	797	767	29	1611
WØBDR	18	820	736	14	1588
WØLGG	568	488	433	46	1535
W6EOT	6	682	671	27	1386
KØONK	109	630	614	12	1365
W8SCA	21	640	633	0	1294
W4PL	14	666	524	19	1223
K6HLR	52	602	519	22	1195
K5W8P	38	572	550	18	1178
W6R8Y	48	554	418	119	1139
K6BPI	25	541	513	28	1107
WØLCX	12	536	521	15	1084
W9NZZ	332	373	2	370	1077
W6WPF	4	529	496	32	1061
W9DO	19	509	434	94	1056
W5RCF	39	493	471	22	1025
W9DYG	22	462	403	33	920
W6GYH	128	354	351	6	839
K1BCS	178	307	231	67	783
W1AWA	17	411	294	5	727
W1OQC	5	342	300	42	689
K4ELG	14	328	301	16	659
K6GZ	292	170	8	162	632
K6MCA	11	298	291	20	620
K9BBO	9	293	268	19	589
K1CIF	68	260	225	27	580
K1GRP	20	272	255	17	564
K2QBW	25	271	199	56	551
K9DAC	15	267	254	12	548
W7ZB	4	273	260	10	547
W7BDU	4	266	256	5	531
W4RLG	24	261	213	24	522
KØQCQ	37	244	228	10	519
W8FNI	25	245	237	7	514
W1NJL	82	224	110	97	513
K6ZYZ	30	243	229	9	511
W9ANA	25	247	207	31	510
W7DPW	17	241	234	11	503
K9AYI	17	246	221	19	503
W9TT	44	236	151	72	503
Late Reports:					
WØOHJ (July)	6	343	333	10	692
K6BPI (July)	56	233	165	68	522

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
W6IAB	76	1006	975	31	2088
KG1DT	202	165	1	164	532
Late Report:					
K6MCA (July)	3	377	363	20	763

BPL for 100 or more *originations-plus-deliveries:*

K4NDC	461	W9ETM	116	K8HVT	102
VE2WT	284	W8LUS	115	KP4WT	102
K4CNY	205	K5LGH	112	K6TPL	100
W4SHJ	156	K9BSU	110	Late Reports:	
K7BKH	146	WA2ALO	106	KP4WT	
K2DEM/1	137	K6TJG	106	(July)	124
W7AVN/5	128	K7BYC	106	W7AVN/5	
W8DAE	122	W3WHK	103	(July)	120
K2VTX/VE2		K4MIH	103	K7CLL	
	120	W9DGA	103	(July)	105
K2YTD/1	120	W9PCQ	103	K4ELG	
				(July)	100

More-Than-One-Operator Stations

K4WCZ 174 W6UCS/6 100

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: K2MES, K2ZHK, K5MBK, K6BPI, W6R8Y, W7DPW.

The BPL is open to all amateurs in the United States, Canada, Cuba and U. S. possessions who report to their SCM a message total of 500 or more or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

NET DIRECTORY

This list includes nets registered up to and including Sept. 23, 1959. Registrations received after that date will be included in the January *QST* listing if received prior to November 15. If you have not yet registered your net for the 1959–60 season, see page 98, Sept. 1959 *QST*, for full instructions.

Nets which do not show a public service purpose in their registration information are not included in the net directory. Nets are registered only on request and upon receipt of the minimum basic information given below. The complete cross-indexed printed directory is scheduled for distribution on Dec. 1.

Important Note: QST net listings and those in the printed net directory are for *information only*. Insofar as possible, net information is listed exactly as received, with certain common abbreviations used to save *QST* space. Listing in *QST* or the printed directory does not signify that these nets have any official status, does not entitle them to exclusive or prior right to the frequency or frequencies on which they are registered, and is no sense a form of copyright.

In order to save space, we use the same abbreviations for days as are used in the printed directory: Dy-Daily, M-Monday, T-Tuesday, W-Wednesday, Th-Thursday, F-Friday, S-Saturday, Sn-Sunday; 1/Sn-first Sunday of month; 1/3S-first and third Saturday of month (etc.).

Name of Net	*Freq.*	*Time*	*Days*
Ala. Emerg. Net "B" (AENB)*	3875	1900 CST	Dy
Ala. Emerg. Net (O)	50,550	1915 CST	MWF
Ala. Emerg. Net P*	3955	1800 CST	Dy
All Service Net (ASN)	7270	1300 EST	Sn
American Legion Amateur Radio Net, Inc.	3975	1900 PDT	Dy
American Red Cross Amateur Communication Service Net (ARCACS) (Fla.)	29,600	2000 EST	3/M
Arctic Amateur Net	3866	1930 AST	M-F
AREC Net (San Francisco Bay Area)	3900	1030 PST	Sn
AREC Road Patrol (Ohio)	50,550	0700 EST	M-F
		1600 EST	
		2330 EST	
	29,160	0700 EST	
		1600 EST	
		2330 EST	
AREC Thunderhead Net (Ohio)	50,550	2000 EST	W
	29,160		
AREC Thunderhead Net (East Side) (Ohio)	50,600	1945 EST	W
Arkansas CW Net (OZK)*	3790	1900 CST	M-F
Badger Emerg. Net (BEN) (Wis.)	3950	1800 CST	Dy
Beehive (Utah) Net (BUN)*	3920	2000 MST	Th
	7272	1230 MST	Sn
British Columbia Emerg. Net (BCEN)*	3650	2200 PST	M-S
Broward Emerg. Net (B.E.N.) (Fla.)	29,610	2100 EST	M
	50,445	2030 EST	M
Buckeye (Ohio CW) Net (BN)*	3580	1900 EST	Dy
Catalpa Amateur Radio Society Net (CARS) (Mich.)	3970	0930 EST	Sn
Central N. Y. 6 Meter Traffic Net	50,700	2100 EST	Sn
Charlotte Civil Defense Net (N. C.)	3825	1330 EST	Sn
Chattanooga Amateur Radio Emerg. Net (CARE) (Tenn.)	50,400	2030 EST	Sn
Clark County (Ohio) Civil Defense Net	3860	1300 EST	1/3Sn
Clermont County Emerg. Net (CCEN) (Ohio)	29,600	2030 EST	Sn
Colorado High Noon Net (HNN)*	7240	1200 MST	M-S
Columbia Basin Net (CBN)	3960	2000 PST	Dy
Confederate Teenage Traffic Net (CTN)	3885	1715 CST	Dy
Conn. Nutmeg (CW) Net (CN)*	3640	1845 EST	Dy
		2130 EST	
Conn. Phone Net (CPN)*	3880	1800 EST	M-S
		1000 EST	Sn
Conn. Training Net (CTN)*	3640	0900 EST	Sn
Custer Emerg. Net	50,250	1115 EST	M
Dade Emerg. Net (DEN) (Fla.)	50,250	1930 EST	M
	145,260	1930 EST	M
	29,500	2000 EST	M exc. 3
DeKalb Steuben County RACES Net (Ind.)	50,850	0800 EST	Sn
Delaware 6 Meter Net (DSN)	50,400	2100 EST	T
Dover Delaware Six Meter Net	50,353	2000 EST	Th
Du Page County RACES Net (DUPRA) (Ill.)	29,600	1930 CDT	M
	53,600		
	145,380		
	145,500		
	146,940		
Early Bird Transcon Net (EB)	3840	0400 CST	Dy
Early Session of KYN (Ky.)*	7125	1700 CST	M-S
Early Ky. Phone Net (EKPN)*	3960	1630 CST	M-S
East Tenn. Net	3980	0645 EST	M-F
Eastern Canada Net (ECN)*	3535	1945 EST	M-F
Eastern Mass 2 Meter Net	145,800	2000 EST	M-F
Eastern Penna. CW Net (EPA)*	3610	1830 EST	Dy
Eastern States Net (ESN)	7080	1730 EST	Dy
Eglin AFB/Ft. Walton 10m Emergency Net (HAIR) (Fla.)	29,560	1900 CST	M

Eighth Regional Net (8RN)*	3530	1945 EST	M-S
		2130 EST	
Empire Slow Speed Net (ESS)* (N. Y.)	3590	1800 EST	Dy
First Regional Net (CW) (1RN)*	3605	1830 EDT	Dy
Fla. Emerg. Phone Net (FEPN)	3910	1830 EST	T
Florida Mid-day Traffic Net (FMTN)*	7230	1200 EST	M-S
Florida Net (FN)*	3675	1900 EST	M-S
Fla. Phone Traffic Net (FPTN)*	3945	0700 EST	M-S
Four Corners Net (4-c)	7225	1200 MST	M-F
Fourth Region Net (4RN)*	3547	1945 EST	Dy
		2130 EST	
Fox River Valley 6 Meter Emer. Net (Wis.)	50,100	2100 CST	MW
Franklin City Civil Defense Net (Ohio)	145,260	1930 EST	T
Ft. Myers Amateur Radio Club Net (FMARC)	29,000	1900 EST	M
Gator Slow Speed Net (GSSN)* (Fla.)	7115	1000 EST	M-S
Georgia State Net (GSN)*	3595	1900 EST	Dy
		2200 EST	
Grey Bruce Net (GBN) (Ont.)*	3645	2230 GMT	MWF
"Hit & Bounce" Net (H ES B)	7130	1730 EST	M-S
	7140	0800 EST	M-S
Hudson Traffic Net (HTN)	7060	1645 EST	Dy
Ill. Emerg. Net (IEN)	3940	1800 CST	TTh
		0800 CST	Sn
Ind. Mich. Ohio Net (IMO)	50,850	1815 EST	M-F
Ind. Phone Net (IFN)*	3910	1800 CST	M-F
		0800 CST	Dy
Ind. Side Band Net	3920	1900 EST	Dy
Interstate Phone Net (IPN)	3980	1550 EST	M-S
Iowa 75 Meter Phone Net*	3970	1230 CST	M-S
Kansas CW Net (QKS)*	3610	1830 CST	Dy
Kansas Phone Net (KPN)*	3920	0800 CST	Sn
		0645 CST	MWF
Kentucky CW Net (KYN)*	3600	1900 CST	Dy
Ky. CW (KYN Slow Speed) Net*	7105	1700 CST	SSn
Kentucky Novice Net (KNN)	3720	1530 CST	M-S
Kentucky Phone Net (KPN)*	3960	1930 CST	Dy.
Kentucky Sideband Net (KSN)	3975	1900 CST	M-F
Ky. Slow Speed Net (KYN)*	7125	1700 CST	M-S
Lake Erie Network	29,150	2000 EST	Sn
Lancaster Emerg. Net (LEN) (Pa.)	146,800	2200 EST	M
Long Island 6 Meter Emerg. Net	50,250	1930 EST	T
Md.-Del.-D. C. Slow Speed Net	3650	2030 EST	MTh
Memphis Emerg. Six Meter Net	50,500	2000 CST	MF
Memphis Ten Meter Mobile Emergency Net	29,627	1900 CST	MF
Memphis Two Meter FM Net	145,500	1930 CST	M
Mich. (QMN) TFC Nets*	3663	1800 EST	Dy
		1830 EST	
The Mid Island 6 Meter Net	50,900	1930 EST	T
Mike Farad Emerg. and Traffic Net	7238	1200 EST	M-F
Minn. Junior Net (MJN)*	3690	1700 CST	MWF
Minn. Section Net CW (MSN)*	3595	1830 CST	Dy
Mission Trail Net, Inc.	3854	1900 PST	Dy
Miss. Magnolia Emerg. Net*	3870	1330 CST	Sn
		1900 CST	M-F
Missouri Emerg. Net (MEN)	3885	1800 CST	MWF
Missouri Traffic Net (MON)*	3580	0700 CST	M-S
		1900 CST	
Monroe Co. Emerg. Net (MCEN)	3910	1400 EST	Sn
Montana Phone Net	3910	1800 MST	MWF
Montana State Net (MSN)	3530	1830 MST	TThS
Morning Ky. Phone Net (MKPN)*	3960	0730 CST	Dy
Muskegon Co. C.D. & Red Cross Amateur Radio 10 Meter Net (Mich.)	29,610	2100 EST	TF
Muskegon Co. C.D. & Red Cross Amateur Radio 2 Meter Net	145,260	0900 EST	W
Nebr. Morning Fone Net*	3980	0730 CST	Dy
Nebr. Section Net (NEB)*	3525	1900 CST	Dy
Nebr. Slow Speed Net (NSS)	3750	1700 CST	M-F
New England Weather Net	3900	0545 EST	M-S
N. H. CW Traffic Net (NHN)*	3685	1830 EST	M-F
New Jersey Net (NJN)*	3695	1900 EST	Dy
N. M. Brass Pounders Net (NMBP)*	7080	2000 MST	MWF
N. Y. State Phone Traffic and Emergency Net (NYSPTEN)	3925	1800 EST	Dy
Newton, Mass. C.D. Net	53,745	2100 EST	Sn
North East Texas Emergency Net (NETEN)	3970	0800 CST	Sn
Northwest Texas Emerg. Net (NWTEN)	3950	0800 CST	Sn.
NYC-LI VHF TFC Net	145,800	2000 EST	TWTh
Ohio Phone Net (OPN)*	3880	1700 EST	M-F
Okla. Slow Speed (SSZ)*	3682.5	2130 CST	M-S
Oklahoma Traffic Net (OLZ)*	3682.5	1900 CST	M-S
Oregon State Net (OSN)*	3585	1830 PST	M-F
Pacific Net	14,240	0700 GMT	Dy
Park Forest C.D. Net (Ill.)	145,590	1930 CST	M-F
Peanut Whistle Net	3995	1830 EST	M
Pine Tree Net (PTN) (Me.)*	3596	1900 EST	M-F
Post Office Net (PON)	14,120	2000 CST	M-F
Quincy (Mass.) Emerg. Net	146,800	1000 EST	Sn
		1915 EST	M
Rattlesnake Net (Fla.)	29,600	1930 EST	M
R. I. State Phone Net (RISPN)*	3915	1830 EST	TWThF
R. I. Traffic Net (RIN)*	3540	1900 EST	M-F
San Joaquin Valley ARRL Sectional Net (SJV) (Cal.)	3915	1830 PST	M-F
Schenectady Emerg. Communications Net (S.E.C.) (N. Y.)	3950	1400 EST	Sn
Sea Gull Net (Me.)*	3940	1730 EST	M-S
Sector 2-D Stoughton, Mass. Net (2-D)	29,490 147,325	1930 EST	M
Seventh Regional Net (RN7)*	3575	1945 PST	Dy
		2130 PST	
7290 Kc. Traffic Net	7290	0900 CST	M-F
		1300 CST	
Seymour Amateur Radio Club Net (SARC) (Ind.)	3750	1900 CDT	1/Sn
Shaw Operational Phone Net (S. C.)	3850	2000 EST	Th
Show-Me Net (SMN) (Mo.)*	3580	1600 CST	Sn
Six Meter Mobileer Net	50,850	1930 EST	S
		1030 EST	Sn
Sixth Regional Net (RN6)*	3615	2000 PST	Dy
		2200 PST	
Social Six Net (L.A. Metro)	50,400	1900 PST	M-F
Social Six Net (San Fernando Valley)	51,000	1830 PST	M-F
Sooner-Nooner Net (Okla.)	7235	1220 CST	M-S
Sooner Traffic Net (STN) (Okla.)	3850	1800 CST	M-S
South Central Ala. Traffic Net (SCAT)	3995	1730 CST	W
South County Amateur Radio Society CD Net (SCARS) (Calif.)	50,710 53,360 145,490	1930 PST	M
South Dakota CW Net (SDN)*	3645	1900 CST	MWF
S. Dak. 40 meter (interstate) net*	7225	1215 CST	M-S
S. Dak. 75 meter phone net*	3870	1830 CST	Dy
Southern California Net (SCN)*	3600	1900 PST	Dy
Southern Michigan Net	50,700	2000 EST	SnMW
Sunshine State Novice Net (SSNN) (Fla.)	7152	1630 EST	M-S
Susquehanna Emerg. Net (S-E-N)	3910	0700 EST	Sn
Tarrant Co. Disaster Control Net (TCDCN) (Texas)	3970	1300 CST	Sn
Teen-Age Net (TAN)	3955	0645 CST	Dy
Teenage Slow Speed Net (TSS) (N. Y.)	3720	1600 EST	M-F
Tennessee CW Net (TN)*	3635	1900 CST	M-S
Tennessee Slow Net (TNSN)	7075	2130 EST	TTh
Tenth Regional Net (TEN)*	3545	1700 CST	Dy
		1945 CST	
		2130 CST	
Third Region Net (3RN)*	3590	1945 EST	Dy
		2130 EST	
Thunderhead Weather Net	50,800	1900 EST	W
Totah Novice Net	7175	2000 MST	Dy
Tri Cities Net (Tenn.)	29,000	2100 EST	Dy
Traffic Hounds' Morning Watch (MW)	7080	0645 EST	M-S
Tri-County Emerg. Net (TCEN) (Calif.)	3815	1000 PST	Sn
Tri-State Net	3815	0715 EST	M-F
Tropical Phone Traffic Net (TPTN) (Fla.)*	3945	1730 EST	Dy
United Trunk Lines (Central)	3590	2130 CST	Dy
United Trunk Lines (Eastern Section) (UTL)	3565	2100 EST	Dy
Vanderburgh Co. AREC & CD Net (Ind.)	29,600	1930 CST	M

Vermillion County Net (V.C.N.) (Ill.)	3870	1000 CST	Sn	West Virginia Phone Net	3890	1830 EST	M-F
	7170	1100 CST	Sn	Western Mass. Net (CW) (WMN)*	3560	1900 EDT	M-S
Virginia Phone Net (VFN)*	3835	1900 EST	Dy	Western Nebraska Net*	3850	0700 MST	M-S
Virginia Slow Net (VSN)*	3680	1830 EST	M-F	Westmoreland Co. CD Net (Pa.)	29,500	2100 EST	T
Washington Section Net (WSN)*	3535	1900 PST	M-F	Wis. Intrastate Net (WIN)*	3535	1900 CDT	Dy
West Virginia CW Net (WVN)*	3570	1900 EST	M-S				

* Part of ARRL National Traffic System.

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM	296	W2HUQ	291	W1ME	289	W3SW	128	K8CVQ	121	W2BOT	117
W1FH	295	W6SYG	291	W6DZZ	289	VP2LU	128	W9GIH	121	W8BIE	117
ZL2GX	295	W8BRA	291	W8BKP	288	VE2AYY	127	W1RST	120	W7FLD	116
W3GHD	294	W6CUQ	290	W7GBW	288	DL9PF	125	W2BTG	120	K8DYX	113
W8HGW	293	W6GFE	290	W7GUV	288	W4WAN	123	W4NPT	120	JA5AF	113
PY2CK	293	W5ASG	290	W8DMD	288	WA2CCC	122	K4SXO	120	W6WQT	112
KV4AA	292	W4BPD	290	W3KT	288	W7CWE	122	W8DWP	120	K4ZCP	111
W8JIN	292	W9YFV	290	W9RBI	288	8P5HS	122	K9IYW	120	W6PHF	110
W9NDA	291	W3JNN	290	W7AMX	287	W3ZHQ	121	W9BTD	120	W9BZW	110
W2AGW	291	G3AAM	289	W6ADP	287	W7LEV	121			ZL1AMO	110
W6ENV	291	G2PL	289	W6EBG	287						
		ZL1HY	289								

Radiotelephone

PY2CK	293	W8HGW	283	W8KMI	279	Z2GX	272	PY4RJ	184	W2TP	140
W6QZ	285	W8BF	283	ZL1HY	278	W8UAS	252	9M2DQ	182	W3AYD	140
W1FH	284	W3JNN	282	W6YY	278	W8DMD	251	HB9NU	181	W1OHJ	134
Z86BW	284	W9RBI	280	W6AM	277	G5VT	245	I1UA	181	G3AAE	131
VQ4ERR	284			CX2CO	273	W9YSX	244	W4GRP	180	W7SFK	130
						W9RNX	242	EA2CB	180	W8RNB	130
						I1AMU	240	W2AEB	177	W9AMR	130
						LU4DMG	238	ZL1PA	172	EA1GH	130
						G3FNN	236	G5RV	171	W2QHH	124
						W3KT	234	W1LSZ	170	W9QZ	124
						W5JUF	230	W1YPK	170	OA4AO	124
						EA2CA	230	W2IWC	166	W3SW	123
						ZP5CP	228	W4BWP	166	W3UMU	122
						ON4DM	226	DL6VM	166	K4HBG	122
						W2WZ	222	CT1MB	164	K2FW	121
						TG9AD	220	W5JCY	161	W7PJK	121
						OZ7FG	215	W6CLS	160	W9SD	121
						W4EEE	214	GC2RS	160	W9QNO	120
						T2LA	211	W9LTR	152	I1WT	120
						ZP5ET	204	W3ICQ	151	W8CQ	119
						W3MAC	203	W5MZP	151	G3MCN	119
						W7MGT	203	VR2BC	151	W1FAB	117
						W2JY	201	W1BAN	150	VE3ES	114
						W2BQM	190	MP4BBW	150	G2UZ	112
						W4AAW	190	W3WGH	144	W3VSU	111
						W7EMP	190	G2AFQ	144	K4SDO	111
						W8IUA	189	I1BAF	143	VE1PQ	111
						K6LAS	185	I1TBU	143	W4SGD	110
								I1ZFT	143		

ENDORSEMENTS

From August 1, to September 1, 1959 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

W6GPB	282	TG9AD	220	W2BAC	160	W5PKF	105	W4FRO/1	101		
W2HMJ	281	VE7MD	220	K2MGR	160	W6MDK	105	W1ORG	101		
W2WZ	281	W1BOD	218	W2ZY	160	Z86ATA	105	W3DAO	101		
W7FZA	281	W6UOV	218	W6MUM	160	K9HMY	104	K3AMH/4	101		
G6ZO	280	SM5KX	216	W9BYN	160	W1UQP	103	W5JRE	101		
W8EWS	272	W6KYT	215	W9DEI	159	K2KUR	103	K6ALH	101		
W5JUF	270	W3AYS	212	OH1TM	159	W3MBN	103	K6SWH	101		
W9FJB	270	VE3DKY	212	K6OXU	156	K8BSZ	103	W6TXA	101		
W4MR	269	W1LOP	211	W5QN	155	K8EUV	103	W0SYA	101		
W6UHA	267	W1TS	211	G3VA	154	G3HTA	103	W1ALW	100		
W6FOZ	263	W9ROU	211	W2CDP	153	Z81AL	103	W1TEC	100		
W6NGA	263	W1EQ	210	K4CLT	152	W1UOP	102	K2TQC	100		
GM3EST	263	K2LWR	210	DL2FS	152	W2VCB	102	W3KKO	100		
W3CGS	262	DJ2AE	209	K2MIO	151	K5JNY	102	W3QYG	100		
W5UX	260	W7DJY	208	W3EIS	151	W6UZW	102	K4BYN	100		
VK4FJ	260	W5VIR	207	W4HZZ	151	K9GTK	102	K4CRF	100		
W2IWC	253	W9WYB	207	W9MZP	151	W9GWO	102	W4NWJ	100		
W2SAW	253	K4HRG	206	K9LFY	151	G2AGR	102	W8GKB	100		
G5VT	253	W1RAD	203	W6KMV	151	HA5BU	102	K8KTZ	100		
W2HQL	252	W1GYE	202	W2GBX	150	OH3TI	102	W8NDC	100		
G3FKM	252	W6KUT	201	K2JFV	150	SM3AU	102	W9MAK	100		
W2BOK	251	W2PZI	200	W3SKQ	150			K9QPF	100		
W2OKM	251	W3MLW	200	W4YMG	150			K8JAU	100		
W8CLR	251	W5WZQ	200	K6OYE	150			F2FC	100		
W2GVZ	250	W6OBH	200	K8IKB	150			KL7FAK	100		
W2LAX	250	W9WIO	200	G3FKU	150						
W2TXB	250	ZE1JV	199	W1AZW	149						
W5OGS	250	KP4WD	192	W9DWQ	149						
W6PH	250	W3LPF	191	G3FKH	149						
I1AOF	250	W4AAW	191	G2AFQ	148						
W2SUC	247	K6RWO	191	W4UO	146						
W2RWE	245	W7AQB	191	SM7VX	146						
W4FVR	245	OH2LA	191	W8MFW	145						
G3AAE	245	W2CGJ	190	W3VXE	144						
W1ZZK	243	W3GRS	190	W4IKL	143						
W3WGH	243	W4IEH	190	I1BAF	143						
W7HKT	243	K9AGB	190	K2UPD	142						
I1AMU	243	W1CKU	189	W4SHX	142						
W6WO	243	VS1FJ	189	W7PJK	142						
K2CPR	242	PY4RJ	186	W6JMB	142						
CE3DZ	241	W6OF	181	W9VFE	142						
G3FNN	241	W7CSW	181	SM5XP	141						
ON4NC	241	W2PDB	180	W1IKB	140						
W6IBD	240	W6GSL	180	W2QDY	140						
W6ULS	240	K6KII	180	W4KAC	140						
W6WWQ	240	W9QGR	180	W4WDI	140						
G8KP	240	VK5RX	180	W4YWX	140						
W4AZK	238	W2SHC	179	W5CK	140						
W2UVE	236	G4TM	176	K6SHJ	140						
W3TIZ	236	W1YPK	175	W7ZAS	140						
SM7MS	236	W0YPQ	175	W9LJP	140						
W5RNQ	235	W5BUR	172	KH6DKA	140						
LA3DB	235	W9IHN	172	W5TJ	138						
EA2CA	233	K0GXR	171	W6PHN	137						
W2ESO	231	G3BNC	171	W1OHA	135						
W8CQ	231	W1ACB	170	W3YPT	135						
W1BGA	230	K2OPJ	170	SM8AJU	134						
W2AEB	230	W2PCJ	170	W2KIR	133						
W2D8B	230	K6GLC	170	DL1EV	132						
W2LSX	230	HB9NL	170	K2YOR	131						
W2MUM	230	W9LTR	168	W7YEY	131						
W2TE	230	W4BWP	166	W1HGJ	130						
W4GRP	228	DJ3KR	166	K4ICK	130						
W9EU	227	G3CEG	165	W4KL	130						
W6ANN	224	KT1EXO	165	K4OMR	130						
Z81BK	224	W1BGY	164	K4TWK	130						
PA0VB	224	W4DXI	164	W4WDI	130						
VE3ES	222	W4SIB	164	W5CPW	130						
W6UOV	221	W6CLS	164	W7ABU	130						
W0MLY	221	W9LQF	164	K9KDI	130						
G5RV	221	K2VUI	161	W9IWX	130						
SM5CO	220	W4KYI	161	SM5AJR	130						

NEW MEMBERS

W2TVR	252	W5PKF	105	W4FRO/1	101						
W7ATV	160	W6MDK	105	W1ORG	101						
W2TP	158	Z86ATA	105	W3DAO	101						
W4DKP	151	K9HMY	104	K3AMH/4	101						
W7WDM	136	W9LJR	104	W5JRE	101						
W9ONB	135	W1UQP	103	K6ALH	101						
SM7BEM	132	K2KUR	103	K6SWH	101						
W3JOR	127	W3MBN	103	W6TXA	101						
K8EZU	122	K6BHM	103	W0SYA	101						
K2DBN	121	K8BSZ	103	W1ALW	100						
Z81NG	120	K8EUV	103	W1TEC	100						
W6JKJ	119	G3HTA	103	K2TQC	100						
F9TX	115	Z81AL	103	W3KKO	100						
G3EEM	115	W1UOP	102	W3QYG	100						
W3BYX	113	W2VCB	102	K4BYN	100						
W7LBN	112	K5JNY	102	K4CRF	100						
Z86AMW	111	W6UZW	102	W4NWJ	100						
4S7FJ	108	K9GTK	102	W8GKB	100						
K4ELK	107	W9GWO	102	K8KTZ	100						
W7CED	107	G2AGR	102	W8NDC	100						
G3ASG	107	HA5BU	102	W9MAK	100						
K6HOR	106	OH3TI	102	K0QPF	100						
GI3CDF	106	OH5OV	102	K0JAU	100						
9G1BQ	106	SM3AU	102	F2FC	100						
W1DGJ	105			KL7FAK	100						

Radiotelephone

W2OKM	212	W2BOK	107	K1BDP	100						
PA0HBO	166	W4PJG	107	W1DGJ	100						
W9JAV	155	W4IUO	106	W1UOP	100						
K2RKV	151	VR2AZ	106	W2KKY	100						
PA0SNG	137	VE3BTI	105	W2RGU	100						
W2TVR	133	CR7LU	104	K5BJU	100						
W7WDM	127	G3CEG	104	W5DA	100						
W2SUC	124	W4LVV	103	K6BX	100						
PA0EEM	119	K2HUK	102	K9KYF	100						
K2HEA	112	VE3BHS	102	GI3CDF	100						
W5UVL	112	W3JOR	101	VE3BUF	100						
I1ZWY	109	W3QD	101	ZP5KQ	100						
		ZE2KO	101								

U.S.-Canada Area and Continental Leaders

W0ELA	279	VE3DIF	250	VE7ZM	277						
KH6IJ	250	VE4XO	180	VE8AW	195						
KL7PI	220	VE5RU	185	VO1DX	220						
VE1PQ	236	VE6NX	241	Z86BW	284						
VE2WW	260			4X4DK	276						

Radiotelephone

W2HTI	233	KL7AFR	190	VE4RP	162						
W4DQH	259	VE1NH	122	VE5RU	178						
W5BGP	251	VE2WW	198	VE6TF	142						
W7PHO	262	VE3KF	224	VE7ZM	249						
W0AIW	251	VE3QA	224	G2PL	273						
KH6OR	254			4X4DK	268						

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Allen R. Breiner, W3ZRQ—SEC: DUI. RM: AXA. PAM: TEJ. At the close of Daylight Saving Time all section nets will return to Eastern Standard Time. The EPA C.W. Net meets nightly at 1830 EST on 3610 kc. The PFN Phone Net meets Mon. through Fri. at 1800 EST on 3850 kc. The Lehigh Valley Novice Net meets Tue. and Sat. at 1600 EST on 7,164 Mc. The Carbon Co. RACES Net meets Mon. and Thurs. at 8 P.M. The Frankford ARC Net meets at 7 P.M. on 53.5 Mc. WHK made BPL on deliveries. K3AHT received a BPL medallion. New appointments: YLL as OO, K3s GFF, BSX and ATX as OESs, FEY is active on 220 Mc. with a 32-element beam and 120 watts. K3BHU and W3s DGX JLQ and QJG received a RACES license. HNK got a new Wonder-Bar working on 10 meters. BUR has been handling South Pole traffic. K3DZN built a new shack but complains the gear doesn't work any better. CUL is erecting a new 60-ft. tower. NNL is handling traffic with an antenna strung through his attic. The 807 Society held a QSO Contest with K3ALD and KN3IPK as winners. K3ANU is back on the air using an AR-8305 for receiving. BYF made a 2-meter QSO with W5JWL in Arkansas. GUH is running 30 watts on 2 meters. K3CNN is now General Class and received CP-15. MFW is raising a 3DZZ beam in preparation for the SS Contest. NOH reports DX still is open to Europe and South America on 40 meters. With the assistance of a new antenna and DX-35, K3ACD is working for DXCC this winter. QZT is now on 20 meters with a Tribander antenna. K3ATX is now on 2 meters with a new nine-element beam. Announcement of a new certificate, "Worked All State Capitals" (WASC), has been made. For complete details write to Award Manager H. L. German, W3IMN, 129 N. 30th Street, Camp Hill, Pa. The West Philly Radio Assn. has already picked out next year's Field Day Site. The Bucks County ARC is holding a QSL design contest with cash awards going to the best entries. Twelve members of the Mt. Airy V.H.F. Society spent a 3-day cruise on the Atlantic with 2- and 6-meter gear. Please do not send reports on citizen's band activity. FCC specifications state this is not an amateur band. Traffic: W3CUL 5432, VR 444, WHK 335, K3DZB 176, W3IVS 118, AXA 105, FKE 51, ZRQ 45, HNK 43, KMD 33, BFF 32, K3DCB 21, HLU 16, W3NNL 14, K3ALD 13, W3TEJ 13, AMC 10, K3ANS 10, W3NQB 10, K3ANU 8, AHT 7, W3HUR 7, PYF 6, BNR 5, PDJ 5, BES 4, ELI 4, K3-DZN 3, W3BPZ 2, K3CNN 2, W3MFW 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Arthur W. Plummer, W3EQK—SEC: PKC. *From Delaware:* Asst. SCM, Delaware: P.R. deCourcelle, 3DQZ. HKS removed gear from his damp basement and put together a Heath SWR and a Q multiplier. CFA, visiting WA2BOH and 2RJN talked with 2TN (Old Forge, N. Y.), who was guesting ZNE and IOU. CFA's new 75S-1 is the first step to s.s.b. K3GEK visited K2MIY. He's aiming at an RTTY rig with 6146s a la July *QST* article. K3GKF reports fine fishing and DXing in Northern VE2-Land. EEB kept skeds from Vermont with DQZ and EJU on 7050 kc. using a cabin-to-car wire. Ced has his 180 DXCC sticker now! K3AMC reports K3GVS is a new Gen. Class licensee in Delaware City operating with a quad 20 feet up. *Md. and D.C.:* ZAQ built the transistorized key (May *QST*) and got fine dots, no dashes. KLA gave him printed circuits. KHA expects to have a 80-10-meter vertical. WSE reports the Marstest was a big success. K3EFR is now mobile with a TRA-10 rig. MCH is now s.s.b. with a Pacemaker and homebrew linear. K3GJD is EAN rep. for 3RN Tue. also 43/49 for WAS. JME, advises the Baltimore County Emergency Net/AREC calls for new members for fall emergencies. Bulletins will be announced on the U.H.F./Soc. Net the 4th Wed. of each month. To be emergency ready, contact JME! BUD is now Extra Class as of 8/21/59. MDD's slow-speed c.w. traffic net returns to Standard Time, Mon. and Thurs. at 2030 EST and has 3650 kc. liaison to MDD. WV says somebody stuck up two poles 62' high all cemented in place for three 8JK antennas! PZW has a new workshop. OSF reports two of his students, Billy eleven years and Fletcher twelve years, are now KN3JLA and JOK. JWN, a new ORS, got his 25-w.p.m. sticker and will QN1 from the U. of Md. EAX is on MDD. K3CIO enjoys seeing his call in print. K3JTE, ex-WA2ABC, passed the Extra Class exam. He and K3JNG, ex-WA2AHM, are residents of Bethesda. CDQ reports being "ready" after an FB trip to XE-Land. Hot weather got ECP down; he ran his house and shack on emergency power 1½ hours one day in August. GVD was /8 most of August; he now has WAS and 20-w.p.m. KN3JPV got his call after the test by GVD. PQ had a big traffic month pinch-hitting for K3ANA, who has been in W6-Land. CBQ has a three-element wide-active XX mobile. ZNW visited W8-Land but says 10 space 6-meter job up, and an 813 on s.s.b. CN is an active mobile. ZNW visited W8-Land but says 10-meters was for the birds. MSR had fifteen 2-meter QSOs mobile en route Michigan. He got 37 stations for 19 countries from Skyline Drive in the V.H.F. Contest. The Dirty Shirt Gang, with 2GJC, 3CAY, 2EQ, 4JAH, K2HPX and WA2HDK (Duck Hunter par excellence), holds forth regularly on 3965 kc. at 7 P.M. GLX, ex-2CQD, has a 68-acre antenna farm at Randallstown. BKM now has a GSB-100 and is s.s.b. for good! RYQ returned to Maryland from New Jersey and says he couldn't stand the "muskeeters." KN3JRU received his license 9/3/59 and made his first contact with a DX-40 to KN7-Land. K3GGG returned from the Bendix trip to California with pneumonia. KED, ex-KR6AL, is looking for a transmitter. MCG is planning to add 30 feet to his four-element 20-meter beam tower as well as a 50-ft. mast for the 80-meter job. He, along with MSK, GRF and PZW, went to work on MSK's new tower. They got up 70 feet unguyed and then ran out of parts. *Think* fellows *think!* Karl is planning to move the shack to the garage where he will have more space for RTTY and a few other projects. KN3HTE made a summer static contact on 3731 kc. with WV6GKJ. EQK is working on a new final with 100THs to replace the 5514s. After a nice vacation in Florida and visits with 4CG and ZIR, at Ft. Myers and Homestead, respectively, in July, EQK's XYL broke her right arm Aug. 13 and Art has been chief cook and bottle washer ever since. The SCM would like to thank the CD appointees for their cooperation in sending Form 1 reports. I also would like the ECs to know that the Md.-Del.-D.C. section ranked second nationally in submitting reports during 1958, 75 per cent reporting. The national average is 20.3 per cent. That's fine, fellows, *but* we need more ECs (see May 1959 *QST* Station Activity report). One parting word; when election time for a new Atlantic Division Director rolls around don't throw your ballots away! Vote for the man you want. Traffic: (Aug.) W3PQ 262, K3JTE 183, W3UE 174, K3GJD 156, W3AHQ 119, PZW 108, JWN 85, TN 81, COK 78, BUD 26, ECP 23, BKE 19, KHA 17, ZNW 16, K3DCP 15, W3CN 8, EEB 8, WSE 4, K3AMC 3, W3WV 3, K3GVD 2. (July) W3COK 54, JWN 17.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: W2YRW. RMs: W2BZJ, W2HDW and W2ZI. New appointments are K2JJC, as OPS and K2DEI as OPS and ORS. With regret we report the passing of W2CYI, Ventnor. George was a regular on the N. J. Phone Net. W2RG is vacationing in Vermont. K2DEI, Maple Shade, is keeping regular skeds with Baffin Island. W2BZJ has completed his antenna repairs and will resume skeds soon. Walt also reports the DVRA's station, W2ZQ, is having problems because of highway construction nearby. W2BEI is heard on d.s.b. and s.s.b. in addition to his NJN skeds. K2BNS, Burlington, reports a newcomer in WV2HJF; also K2-AJJ dropped the "N." WA2AXP is a new traffic-handler. K2CPR reports a DX total of 249 worked. K2SOX is now located in Northfield. W2RXL, NJN Manager, reports 39 net members earned net certificates in 1959. A total of 291 was handled in August. K2DSL, Trenton, will continue her studies this fall. K2JKA, editor of the Gloucester County Radio Club publication, *Cross Talk*, is doing an FB job. K2SOL, Sewell, vacationed in the

(Continued on page 100)

No. 59 of a Series

HOW CAN A MANUFACTURER IMPROVE HIS PRODUCT?

A SUCCESSFUL PRODUCT for the amateur market always poses some problems for its producer when it is in production. After the receiver or transmitter, as the case may be, has been out in the field for a period of time, owners send requests to the factory for modifications to accomplish some specific purpose or function.

A GOOD EXAMPLE, in case, is the HT-32 Transmitter. It and its successor versions have been in production for over three years. Even though it is the most popular single sideband transmitter in the amateur field we at the factory receive requests for minor modifications or adaptations. In many instances, we are able to help the customer by showing him an easy method to accomplish his desired end result. Some we add to the production units. All these suggestions or comments are extremely welcomed by all of us at the factory because, obviously, they improve the product, increase its versatility, and guide us in future design. Many of these cannot be incorporated as design features in production items because their application is too limited.

IN THE PAST we have had numerous requests for a method of completely crystal-controlling the HT-32 so that it may be used by the Novice. For some time we were not able to give an answer to this question but we have now developed a simple, reliable plug-in adaptor which can be made easily by the amateur. If you are interested, or if you know of any owner of an HT-32 who would like details on this adaptor, a QSL card addressed to my attention will assure the receipt of the circuit and details.

YOUR COMMENTS and suggestions are also most welcome.

73,
R. W. "BUD" DROBISH, W9QVA

Bill Fellgin Jr. W. J. Hallgren W9AC for hallicrafters

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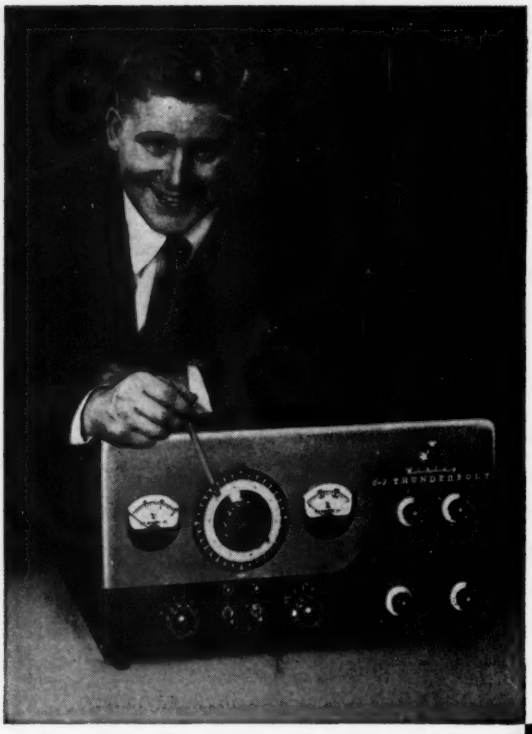

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"6N2" THUNDERBOLT POWER AMPLIFIER—Rated at 1200 watts P.E.P.* input SSB and DSB, Class AB_1; 1000 watts CW input Class C; and 700 watts input AM linear, Class AB_1. Drive requirements approximately 5 watts in Class AB_1 linear or 6 watts Class C continuous wave. Continuous bandswitched coverage on 6 and 2 meters—effectively TVI suppressed and filtered—wide range pi network output. Outstanding efficiency—losses on 2 meters held to approximately 5%, instead of common 25% losses experienced in some other 2 meter circuitry! This is possible due to the unique silver-plated Hi-Q coaxial line; silver-plated anode and other external metal portions of the 7034 tubes; silver-plated inductors; capacitors; and switch! With tubes.

Cat. No.		Amateur Net
240-362-1	Kit	$524.50
240-362-2	Wired	589.50

"6N2" TRANSMITTER—This compact VHF transmitter offers instant bandswitching coverage of both 6 and 2 meters. Completely shielded and TVI suppressed, the "6N2" may be used with the Viking "Ranger," Viking I, "Valiant," or similar power supply-modulator combinations capable of at least 6.3 VAC at 3.5 amp., 300 VDC at 70 ma., 300 to 750 VDC at 200 ma. and 30 or more watts of audio. Power input is rated at 150 watts CW and 100 watts AM phone . . . shaped keying results in excellent waveform. With tubes.

Cat. No.		Amateur Net
240-201-1	Kit	$129.50
240-201-2	Wired	169.50

"6N2" CONVERTER—This compact Viking "6N2" Converter provides instant front panel switching from normal receiver operation to either 6 or 2 meters. Maximum sensitivity and low noise figure . . . excellent image and I.F. rejection. With tubes. Available kit or wired in either 26 to 30 mcs., 28 to 30 mcs., 14 to 18 mcs., or 30.5 to 24.5 mcs. ranges. Specify range desired.

Kits	Amateur Net $59.95
Wired Models	Amateur Net $89.95

"6N2" VFO—Exceptionally stable and compact—designed to replace 8 to 9 mc. crystals in frequency multiplying 6 and 2 meter transmitters, including types using overtone oscillators. Temperature compensated and voltage regulated for minimum drift and high stability. Plexiglas dial calibrated from 144 to 148 mc., 50 to 51.5 mc., 51.5 to 53 mc. With tubes and pre-calibrated dial.

Cat. No.		Amateur Net
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240-133-2	Wired	54.95

Other equipment for 6 and 2 meters!

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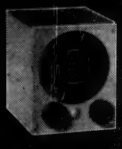
"6N2" CONVERTER



"6N2" VFO

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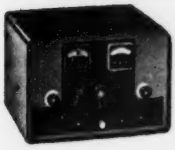
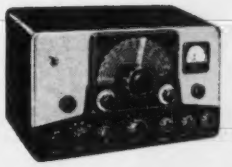


"CHALLENGER"—70 watts AM input 80 through 6, 120 watts CW input 80 thru 10—85 watts on 6. With tubes.

Cat. No.		Amateur Net
240-182-1	Kit	$114.75
240-182-2	Wired	$154.75



"RANGER"—75 watts CW and 65 watts phone input. Bandswitching 160 through 10. Built-in VFO. With tubes.

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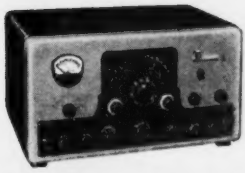
240-161-1	Kit	$229.50
240-161-2	Wired	$329.50



"VALIANT"—Instant bandswitching 160 through 10. 275 watts input CW and SSB (P.E.P. with aux. exciter) 200 watts phone. With tubes.

Cat. No.		Amateur Net
240-104-1	Kit	$349.50
240-104-2	Wired	$439.50

3 feature-packed amplifiers!

"COURIER" AMPLIFIER—Class "B" linear rated 500 watts P.E.P. input with aux. SSB exciter—500 watts CW and 200 watts AM! Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts. With tubes.

Cat. No.		Amateur Net
240-352-1	Kit	$344.50
240-352-2	Wired	$269.50

"THUNDERBOLT" AMPLIFIER—Rated 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear! Continuous coverage 3.5 to 30 mcs. May be driven by "Ranger", or other unit of comparable output. With tubes.

Cat. No.		Amateur Net
240-353-1	Kit	$824.50
240-353-2	Wired	$589.50

"KILOWATT" AMPLIFIER—This exciting unit is the only power amplifier available which will deliver full 2000 watts SSB* input and 1000 watts CW and AM! Continuous coverage 3.5 to 30 mcs. Excitation requirements: 30 watts RF and 10 watts audio for AM; 10 watts peak for SSB.

Cat. No.		Amateur Net
240-1000	Wired and tested	$1595.00
251-101-1	Matching desk top, back and 3 drawer pedestal..FOB Corry, Pa.	$132.00

The FCC permits a maximum of one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.

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BUILD YOUR OWN HEATHKIT® HAM GEAR

"SENECA" VHF HAM TRANSMITTER KIT

Beautifully styled and a top performer of highest quality throughout. The "Seneca" is a completely self-contained 6 and 2 meter transmitter featuring a built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions, 2 power supplies, 5 radio frequency stages, and 2 dual-triode audio stages. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. An auxiliary socket provides for receiver muting, remote operation of antenna relay and remote control of the transmitter such as with the Heathkit VX-1 Voice Control. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings slightly reduced in the 2 meter band. Ideal for ham operators wishing to extend transmission into the VHF region. Shpg. Wt. 56 lbs.

HEATHKIT VHF-1 **$159.95**

HEATHKIT DX-20 **$35.95**

DX-20 CW TRANSMITTER KIT

Designed exclusively for CW work, the DX-20 provides the novice as well as the advanced-class CW operator with a low cost transmitter featuring high operating efficiency. Single-knob bandswitching covers 80, 40, 20, 15 and 10 meters using crystals or an external VFO. Pi network output circuit matches antenna impedances between 50 and 1,000 ohms. Employs a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. Easy-to-read panel meter indicates final grid or plate current selected by the panel switch. Complete RF shielding to minimize TVI interference. Easy-to-build with complete instructions provided. Shpg. Wt. 19 lbs.

HEATH COMPANY Benton Harbor, Michigan — a subsidiary of Daystrom, Inc.

Mobile Gear...for the Ham on the Go!

"CHEYENNE" MOBILE HAM TRANSMITTER KIT

All the fun and excitement . . . plus the convenience of mobile operation are yours in the all-new Heathkit "Cheyenne" transmitter. The neat, compact, and efficient circuitry provides you with high power capability in mobile operation, with low battery drain using carrier controlled modulation. All necessary power is supplied by the model MP-1 described below. Covers 80, 40, 20, 15 and 10 meters with up to 90 watts input on phone. Features built-in VFO, modulator, 4 RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. High quality components are used for long service life and reliable operation, along with rugged chassis construction to withstand mobile vibrations and shock. Thoughtful circuit layout provides for ease of assembly with complete instructions and detailed pictorial diagrams to insure success. A spotting switch is also provided. A specially designed ceramic microphone is included to insure effective modulation with plenty of "punch". Plan now to enjoy the fun of mobile operation by building this superb transmitter. Shpg. Wt. 19 lbs.

HEATHKIT MT-1
$99.95

"COMANCHE" MOBILE HAM RECEIVER KIT

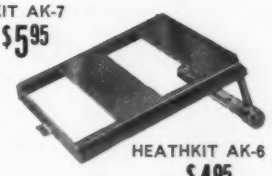
Everything you could ask for in modern design mobile gear is provided in the "Comanche" . . . handsome styling, rugged construction, top quality components . . . and, best of all, a price you can afford. The "Comanche" is an 8-tube superheterodyne ham band receiver operating AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. A 3 mc crystal lattice-type IF filter permits the receiver to use single conversion without image interference, and at the same time creates a steep sided 3 kc flat top IF bandpass characteristic comparable to mechanical type filters. The neat, compact and easy-to-assemble circuitry features outstanding sensitivity, stability and selectivity on all bands. Circuit includes an RF stage, converter, 2 IF stages, 2 detectors, noise limiter, 2 audio stages and a voltage regulator. Sensitivity is better than 1 microvolt on all bands and signal-to-noise ratio is better than 10 db down at 1 microvolt input. One of the finest investments you can make in mobile gear. Shpg. Wt. 19 lbs.

HEATHKIT MR-1
$119.95

MOBILE SPEAKER KIT

A matching companion speaker for the "Comanche" mobile receiver. Housed in a rugged steel case with brackets provided for easy installation on fire wall or under dashboard, etc. Uses 5 PM speaker with 8 ohm voice coil. Measures 5" H. x 5" W. x 2½" D. Shpg. Wt. 4 lbs.

HEATHKIT AK-7
$5.95



HEATHKIT AK-6
$4.95

HEATHKIT MP-1
$44.95

MOBILE POWER SUPPLY KIT

This heavy duty transistor power supply furnishes all the power required to operate both the MT-1 Transmitter and MR-1 Receiver. It features two 2N442 transistors in a 400 cycle switching circuit, supplying a full 120 watts of DC power. Under intermittent operation it will deliver up to 150 watts. Kit contains everything required for complete installation, including 12' of heavy battery cable, tap-in studs for battery posts, power plug and 15' of connecting cable. Chassis size is 9 1/16" L. x 4¼" W. x 2" H. Operates from 12-14 volt battery source. Circuit convenience provided by self-contained relay which allows push-to-talk mobile operation. Shpg. Wt. 8 lbs.

MOBILE BASE MOUNT KIT

The AK-6 Base Mount is designed to hold both transmitter and receiver conveniently at driver's side. Universal mounting bracket has adjustable legs to fit most automobiles. Shpg. Wt. 5 lbs.

POWER METER KIT

HEATHKIT PM-2
$12.95

This handy unit picks up energy from your mobile antenna and indicates when your transmitter is tuned for maximum output. A variable sensitivity control is provided. Features a strong magnet on a swivel-mount for holding it on a car dashboard or other suitable spot. Has its own antenna or may be connected to existing antenna. Sensitive 200 ua meter. Shpg. Wt. 2 lbs.

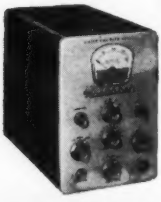
COMPANION UNITS

HEATHKIT TX-1 $234.95

"APACHE" HAM TRANSMITTER KIT

The many features and modern styling of the "Apache" will provide you with just about everything you could ask for in transmitting facilities. Emphasizing high quality the "Apache" operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission using the SB-10 External adapter. The newly designed, compact and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample bandspread and precise frequency settings. The bandswitch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. A cooling fan is also provided. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and control panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button enables the operator to "zero beat" an incoming frequency without putting the transmitter on the air. Equip your ham shack now for top transmitting enjoyment with this outstanding unit. Shpg. Wt. 110 lbs. Shipped motor freight unless otherwise specified.

HEATHKIT SB-10 $89.95



SINGLE SIDEBAND ADAPTER KIT

Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter, this unit lets you operate on SSB at a minimum of cost, yet does not affect the normal AM and CW functions of the transmitter. By making a few simple circuit modifications, the DX-100 and DX-100-B transmitters can be used, utilizing all existing RF circuitry. Extremely easy to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. An easy-to-read panel meter indicates power output to aid in tuning. A built-in electronic voice control with anti-trip circuit is also provided. 10 watts PEP output. Unwanted sideband suppression is in excess of 30 db and carrier suppression is in excess of 40 db. An EL84/6BQ5 tube is used for linear RF output. Shpg. Wt. 12 lbs.

MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. $8.95.

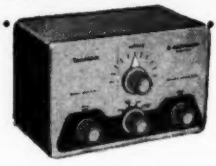
HEATHKIT AR-3 $29.95

(less cabinet)

ALL-BAND RECEIVER KIT

A fine receiver for the beginning ham or short wave listener, designed for high circuit efficiency and easy construction. Covers 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. Transformer operated power supply. Features include: bandswitch, bandspread tuning, phone-standby-CW switch, phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Shpg. Wt. 12 lbs.

CABINET: Opt. extra. No. 91-15A. Shpg. Wt. 5 lbs. $4.95.



HEATHKIT QF-1 $9.95

"Q" MULTIPLIER KIT

Useful on crowded phone and CW bands, this kit adds selectivity and signal rejection to your receiver. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Provides an effective "Q" of approximately 4,000 for extremely sharp "peak" or "null". The QF-1 is powered from the receiver with which it is used. Shpg. Wt. 3 lbs.

OF DISTINCTIVE QUALITY

ACCESSORY SPEAKER KIT

Handsomely designed and color styled to match the "Mohawk" receiver this heavy duty 8" speaker with 4.7 ounce magnet provides excellent tone quality. Housed in attractive ¾" plywood cabinet with perforated metal grille. Speaker impedance is 8 ohms. Shpg. Wt. 7 lbs.

HEATHKIT AK-5
$9.95

HEATHKIT RX-1 $274.95

"MOHAWK" HAM RECEIVER KIT

Styled to match the "Apache" transmitter the "Mohawk" ham band receiver provides all the functions required for clear, rock-steady reception. Designed especially for ham band operation this 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. Specially designed for single sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled wired and aligned front end coil bandswitch assembly assures ease of construction and top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, bridge T-notch filter for excellent heterodyne rejection, and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Each ham band is separately calibrated on a rotating slide rule dial to provide clear frequency settings with more than ample bandspread. Front panel features S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, Bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and illuminated gear driven vernier slide rule tuning dial. Attractively styled with die-cast aluminum control knobs and escutcheons. No external alignment equipment is required for precise calibration of the "Mohawk". All adjustments are easily accomplished using the unique method described in the manual. An outstanding buy in a communications receiver. Shpg. Wt. 66 lbs. Shipped motor freight unless otherwise specified.

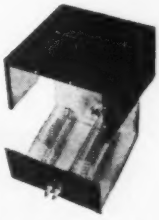
HEATHKIT AM-2
$15.95

REFLECTED POWER METER KIT

The AM-2 measures forward and reflected power or standing wave ratio. Handles a peak power of well over 1 kilowatt of energy and covers 160 through 6 meters. Input and output impedance provided for 50 or 75 ohm lines. No external power required for operation. Use it also to match impedances between exciters or RF sources and grounded grid amplifiers. Shpg. Wt. 3 lbs.

BALUN COIL KIT

Match unbalanced coaxial lines, found on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance with this handy transmitter accessory. Capable of handling power input up to 200 watts, the B-1 may be used with transmitters and receivers covering 80 through 10 meters. No adjustment required. Shpg. Wt. 4 lbs.



HEATHKIT B-1
$8.95

HEATHKIT VX-1
$23.95

ELECTRONIC VOICE CONTROL KIT

Eliminate hand switching with this convenient kit. Switch from receiver to transmitter by merely talking into your microphone. Sensitivity controls allow adjustment to all conditions. Power supply is built in and terminal strip on the rear of the chassis accommodates receiver and speaker connections and also a 117 volt antenna relay. Shpg. Wt. 5 lbs.

HEATHKIT VF-1
$19.50

VFO KIT

For below the cost of crystals to obtain the same frequency coverage this variable frequency oscillator covers 160, 80, 40, 20, 15 and 10 meters with three basic oscillator frequencies. Providing better than 10 volt average RF output on fundamentals, the VF-1 is capable of driving the most modern transmitters. Requires only 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a. Illuminated dial reads direct. Shpg. Wt. 7 lbs.

Save 1/2 or more...with Heathkits

HEATHKIT DX-100-B $189.50

DX-100-B PHONE AND CW TRANSMITTER KIT

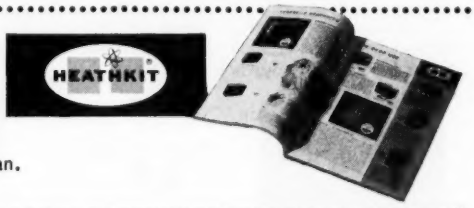
A long standing favorite in the Heathkit line, the DX-100-B combines modern styling and circuit ingenuity to bring you an exceptionally fine transmitter at an economical price. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The rugged one-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. The chassis is punched to accept sideband adapter modifications. Featured are a built-in VFO, modulator, and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience single-knob bandswitching and illuminated VFO dial on meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage modulated by a pair of 1625's. Shpg. Wt. 107 lbs. Shipped motor freight unless otherwise specified.

HEATHKIT DX-40 $64.95

DX-40 PHONE AND CW TRANSMITTER KIT

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob band-switching is combined with the pi network output circuit for complete operating convenience. Features a D'Arsonval movement panel meter. A line filter and liberal shielding provides for high stability and minimum TVI. Provision is made for three crystals easily accessible through a "trap door" in the back of the cabinet. A 4-position switch selects any of the three crystals or jack for external VFO. Power for the VFO is available on the rear apron of the chassis. Easy-to-follow step-by-step instructions let assembly proceed smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.

Free Send now for latest Heathkit Catalog describing in detail over 100 easy-to-assemble kits for the Hi-Fi fan, radio ham, boat owner and technician.



HEATH COMPANY BENTON HARBOR 9, MICH.

pioneer in do-it-yourself electronics

a subsidiary of Daystrom, Inc.

Send latest Free Heathkit Catalog.

All prices and specifications subject to change without notice. Please include postage on orders to be shipped parcel post. 20% deposit is required on all C.O.D. orders. All prices are NET F.O.B. Benton Harbor, Mich., and apply to Continental U.S. and Possessions only.

NAME

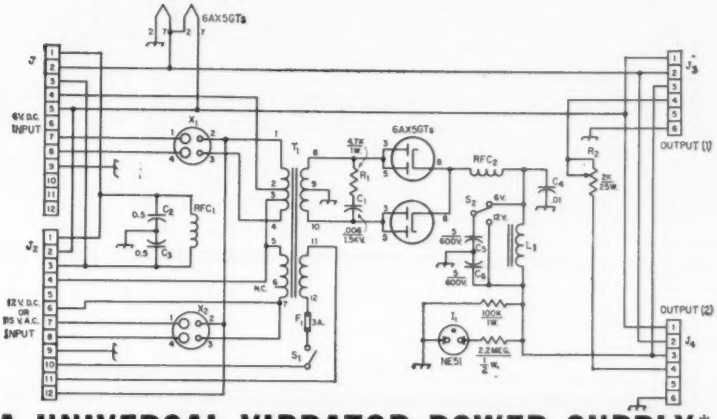
ADDRESS

CITY ZONE STATE

QUANTITY	KIT NAME	MODEL NO.	PRICE

MALLORY HAM BULLETIN

For emergency, mobile or home-station use . . .



A UNIVERSAL VIBRATOR POWER SUPPLY*

In this and any other vibrator circuit, you'll get more efficient operation when you use long-life, sure-starting Mallory vibrators. Both X_1 and X_2 in the above circuit are Mallory vibrators . . . a 6-volt Mallory 4501 for the former, and a 12-volt Mallory G-4501 for the latter. The product of 30 years' experience and intensive research, Mallory vibrators are the outstanding choice of discriminating original equipment manufacturers, radio amateurs and top service technicians.

Your distributor will give you prompt and helpful service in choosing the components you need.

MALLORY—For outstanding all-around performance . . .

RMC Discaps® . . . for C_4 hash-filter capacitors, disk ceramic. They're available in the file-card five pack.

® Registered Trademark of Radio Materials Company, a Division of P. R. Mallory & Co. Inc.

FP Capacitors . . . for C_3 and C_5 ripple filter capacitors . . . FP's are the original 85°C capacitors.

GEMS . . . for C_1 buffer capacitor, tubular plastic . . . give outstanding service, in easy-to-use dispenser.

** See circuit on page 493, 36th edition, Radio Amateurs Handbook, for complete list of parts.*

P.R. MALLORY & CO. Inc.
MALLORY

Collins KWM-2

Introducing another Collins an advanced amateur's system engineered for

Superior single sideband performance in a variety of installations is assured by the Collins KWM-2 Mobile Transceiver. Engineered for the amateur who desires an 80 through 10 meter mobile transceiver, the KWM-2 design incorporates time-proven and advanced communication concepts.

COLLINS

Mobile Transceiver

creative design – 80-10 meter transceiver – mobile and home operation.

The new KWM-2 provides high frequency stability on fourteen 200 kc bands from 3.4 mc to 30.0 mc. With 175 watts PEP input on SSB, or 160 watts on CW, the KWM-2 provides ample power for excellent communication. Filter type SSB generation, permeability-tuned oscillator, crystal-controlled double conversion, VOX and anti-trip circuits, and exclusive ALC and RF inverse feedback are distinguished features of the KWM-2. The Collins Mechanical Filter, RF amplifier, all tuned circuits, and several tubes perform the dual role of transmitting and receiving. CW break-in and monitoring sidetone circuits are built-in, and all four plugs in the mobile mount connect the KWM-2 automatically.

The Collins KWM-2 Mobile Transceiver weighs 18 lbs., and measures 7-3/4″ H (with removable legs), 14-3/4″ W, and 13-1/4″ D. Mounts, accessories, and power supplies are available for 12 v dc, 24-28 v dc, and 115 v ac operation.

See the KWM-2 now on display at your Collins Distributor. Ask for the colorful KWM-2 brochure with complete specifications.

An attractive Collins amateur radio system built around the versatile KWM-2 Mobile Transceiver. Shown are the 516F-2 AC Power Supply with SC-301 Antenna Control Console, KWM-2, 312B-5 PTO Console, and 30S-1 Linear Amplifier.

If it weren't for Amateur Radio 25 years ago, there'd be no Eimac tubes today...

Twenty-five years ago W6UF and W6CHE were unhappy with the way final amplifier tubes were performing. They decided to do something about it. They founded a company, called their products Eimac tubes and ran their first ad in this magazine in November, 1934.

What has happened since is reviewed in part on these pages. At Eimac W6UF and W6CHE, and 120 other amateur radio operators are on-the-air getting just as much of a thrill out of their hobby today as they did then and enjoying it much more.

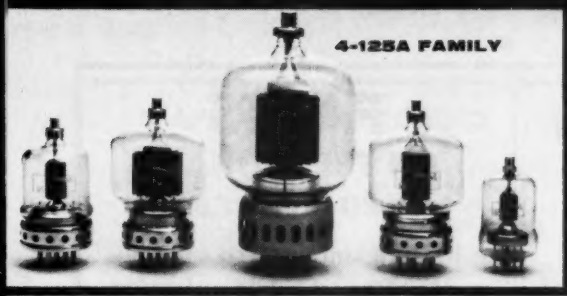
150T "The only tube the low power man can buy, yet still use effectively at higher power" was the case for the first Eimac tube, the 150T triode, in 1934. It was designed primarily for the amateur and established Eimac tube characteristics for the future—clean, hard vacuums, simplified design, lower driving power, high mutual conductance and superior overload capability.

450T Only two years later in 1936, the statement could proudly be made that "practically every major airline uses Eimac tubes." The 450T triode had captured the imagination and fulfilled the critical desires of aviation and was first choice in ground-to-air communications. It featured a new type thoriated tungsten filament by Eimac ending premature emission failures and guaranteed never to fail because of gas released internally. Later, in 1938, Eimac tubes went into TV service at Station KTSL.

3X2500A3 FM and Eimac tubes were together from the start. By the time Major Armstrong had convinced the world that FM was a great advancement in broadcasting, Eimac tubes were in nearly every experimental FM broadcast station in the nation. The first tubes used were the internal anode triodes. In 1945 the external anode triode 3X2500A3 was introduced and subsequently used in the world's most powerful FM transmitter —50,000 watts.

304T In 1940 the Eimac multi-unit triodes made their debut to provide a high power, low voltage tube with uncommonly low internal resistance which would operate efficiently up to 200mc. In actual service the tubes operated with as much as 20,000 volts on the plate—10 times the rated voltage. The 304T, four triodes in one, was then and is now acclaimed as a top linear amplifier tube.

VT 127 The Navy held its first sea radar tests in 1939. Generating the power were Eimac 100T triodes. Two years later when World War II started, this equipment was the prototype of the first radar to see action in the Pacific. Airborne radar with its demands for smaller antenna meant higher frequency operation. The Eimac 15E met all requirements and made possible 26,000 radar sets used universally by the Navy. Said the Navy, "No other single type of airborne electronic equipment contributed as much." Many of the renowned VT series radar tubes were another Eimac contribution.



4X150A

4-125A FAMILY (5 TUBES) In 1945 Eimac led in power tetrode development with the introduction of the 4-125A as the first of its radial-beam family. These tubes set the standard for the tetrode art and are known for their low driving power requirements, low grid emission, low grid-plate capacitances, minimized neutralization requirements and dependable VHF performance.

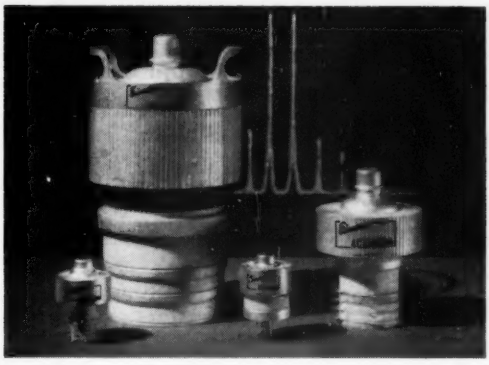
4X150A Radial-beam power tetrode advantages in the rugged, compact external anode package was introduced by Eimac in 1946 with the 4X500A followed closely by the incomparable 4X150A. This unique approach enabled smaller, high power, high frequency equipment and coaxial cavity circuits. The Eimac 4X150A has since become the most copied of transmitting tubes and father of the modern 4CX250B and 4CX300A.

AMPLIFIER KLYSTRON Despite its reputation in leading tetrode development and manufacture, Eimac saw the shortcomings of grid tubes for UHF, in 1948, and started a development program in amplifier klystrons. The result — Eimac external-cavity ceramic klystrons — the most extensively used tubes in tropospheric communications. From the initial Pole Vault system to White Alice and NATO, these klystrons are unrivaled.

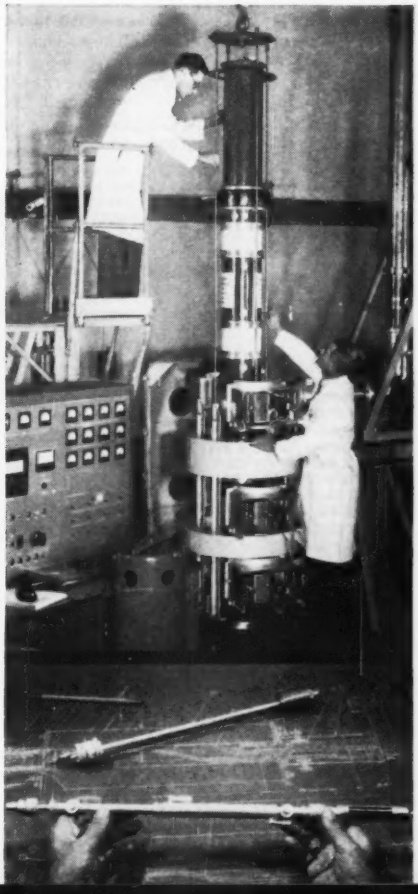
4CX300A, 4CX250B, 4CX1000A, 4CX5000A Ceramic is replacing glass in the Eimac tube line-up. Over 40 tube types now have the advantages of the ceramic envelope. Its ability to withstand thermal and physical shock has application benefits. Other extras are also built in, such as smaller size without power sacrifice, high temperature and precise tolerance processing.

X626 Super power, 1.25 megawatts of long-pulse power, at UHF is now available with the Eimac X626. In Ballistic Missile detection and tracking, or interplanetary DX, (this tube holds the record to Venus and back — 56,000,000 miles), the X626 is now an important part of our space age.

TWT Now, microwave in the form of ceramic traveling wave tubes and reflex klystrons. Eimac is engaged in the development and manufacture of new electron devices to propagate the uncrowded spectrum at Super High Frequencies and above.



X626



The dependable tubes of yesteryear have not been forgotten. They are constantly improved. Most of the oldtimers on review here are still available and many are replacements for originals that have finally given in after years and years of service.

Eimac

EITEL-McCULLOUGH, INC.
San Carlos, California

TWT

IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—with only 65 watts and a $16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California
January 31, 1959

GOTHAM
1805 Purdy Avenue
Miami Beach 39, Florida

Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antennal

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,
Thomas G. Gabbert, K6INI (Ex-TI2TG)

List of 105 countries/stations worked with 65 watts and a V-80 vertical

BV1US	KG4AI	VK3YL
CE3DZ	KG6FAE	VK9XK
ZL5AA	KH6IJ	VK9AT
CO2WD	KL7BUZ	VKØCJ
CN2BK	KM6AX	VP2KFA
CN8FB	KP4ACF	VP2AY
CR9AH	KP6AL	VP2DW
CT1CB	KR6BF	VP2MX
CX2FD	KS4AZ	VP2LU
DL1FF	KV4AA	VP2SW
DU7SV	KW6CA	VP5CP
EA1FD	KX6AF	VP5BH
EI4N	KZ5CS	VP6TR
F8VQ	LA3SG	VP7NM
FB8ZZ	LU2DFC	LU1ZS
FG7XE	LZ1KSP	VP9BK
FK8AL	OA4AU	VR2DA
FM7WT	OE9EJ	VR3B
FO8AD	OH2TM	VS1HC
G3DOG	OK1FF	VS2DW
GC8DO	ON4AY	VS6LN
GI3WUI	KG1AX	XE1PJ
GM3GJB	OZ2KK	XW8AI
GW3LJN	PAØFAB	YN1JW
HA5KBP	PJ5AA	YU3FS
HC4IM	PJ2ME	YV5HL
HC8LUX	PY2EW	ZC5AL
HE9LAC	PYØNE	ZE1JV
HP1LO	SM5AQB	ZK1BS
I1MV	SP6BY	KH6MG/ZK1
JA1ANG	TI2LA	ZK2AD
JZØHA	UA1AU	ZL1ABZ
W1AW	UAØKKB	ZL3JA
KB6BJ	UQ2AB	ZM6AS
KC4AF	VE8OJ	ZS1OU

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- If K6INI can do it, so can you.
- Absolutely no guying needed.
- Radials not required.
- Only a few square inches of space needed.
- Four metal mounting straps furnished.
- Special B & W loading coil furnished.
- Every vertical is complete, ready for use.
- Mount it at any convenient height.
- No relays, traps, or gadgets used.
- Accepted design—in use for many years.
- Many thousands in use the world over.
- Simple assembly, quick installation.
- Withstands 75 mph windstorms.
- Non-corrosive aluminum used exclusively.
- Omnidirectional radiation.
- Multi-band, V80 works 80, 40, 20, 15, 10, 6.
- Ideal for novices, but will handle a Kw.
- Will work with any receiver and xmitter.
- Overall height 23 feet.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price. ONLY $16.95.

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A product that is consistently advertised in *QST* month after month, year after year, has to be good. Over 10,000 GOTHAM antennas have been purchased by *QST* readers. Even the "price-is-no-object" customers choose GOTHAM antennas on the basis of performance and value. Select your needs from this list of 50 antennas:

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TWO BANDER BEAMS

A full half-wave element is used on each band. No coils, traps, baluns, or stubs are used. No calculations or machining required. Everything comes ready for easy assembly and use. *Proven Gotham Value!*

6–10 TWO BANDER.....	☐	$29.95
10–15 TWO BANDER.....	☐	34.95
10–20 TWO BANDER.....	☐	36.95
15–20 TWO BANDER.....	☐	38.95

TRIBANDER

Do not confuse these full-size Tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

☐ 6-10-15 $39.95 ☐ 10-15-20 $49.95

2 METER BEAMS

Gotham makes only two different two meter beams, a six-element job and a twelve-element job. They are both Yagi beams, with all the elements in line on a twelve foot boom.

☐ Deluxe 6-Element 9.95 ☐ 12-El 16.95

6 METER BEAMS

New records are being made every day with Gotham six-meter beams. Give your rig a chance to show what it can do, with a Gotham six-meter beam.

☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95

10 METER BEAMS

Ten meter addicts claim that ten meters can't be beaten for all-around performance. Plenty of DX and skip contacts when the band is open, and 30-50 miles consistent ground wave when the band is shut down. Thousands of Gotham ten meter beams have been perking for years, working wonders for their owners, and attesting to the superior design and value of a Gotham beam.

☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95

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Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

☐ Beam #R6 (6 Meters, 4-El)....$38.95
☐ Beam #R10 (10 Meters, 4-El).. 40.95
☐ Beam #R15 (15 Meters, 3-El).. 49.95

15 METER BEAMS

Fifteen meters is the "sleeper" band. Don't be surprised if you put out a quick, quiet CQ and get a contact half-way around the world. Working the world with low power is a common occurrence on fifteen meters when you have a Gotham beam.

☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95

20 METER BEAMS

A beam is a necessity on twenty meters, to battle the QRM and to give your signal the added punch it needs to over-ride the high power boys. Hundreds and hundreds of twenty meter beams, working year after year, prove that there is no better value than a Gotham twenty meter beam.

☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

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Gotham Antenna Company
1805 Purdy Ave.
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J. E. Bloomcus
209 N. 83rd Ave. NW
Enumclaw, Wash.

Dear Sir:

While I was in Enumclaw I purchased a Gotham V-80 antenna and took it back to Tibet with me. On my way back I stopped off at Tokolau (ZM7) and was on the air for two days and worked many other stations all over the world with 25 watts. I was very surprised at the strength of one station whom I worked. This was W7PHO, who I later found out was using a Gotham vertical. I received very loud reports from all over the world from here.

I went to Tibet and used the V-80 on all bands and got excellent reports from W stations. I have never called a CQ yet and not had quite a large number of stations calling me. This was true at ZM7C as well as AC4AZ. Here in Tibet I heard W7PHO again on 20 meters using his V-80. He is running 100 watts and was the loudest signal on the band.

I am very pleased with all of my results and certainly hope that you can encourage your patrons to use it even more by reproducing this letter as an excellent recommendation.

Sincerely,

J E Bloomcus
EX ZM7C - AC4AZ

☐ V40 vertical for 40, 20, 15, 10, 6 meters $14.95
☐ V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters. $16.95
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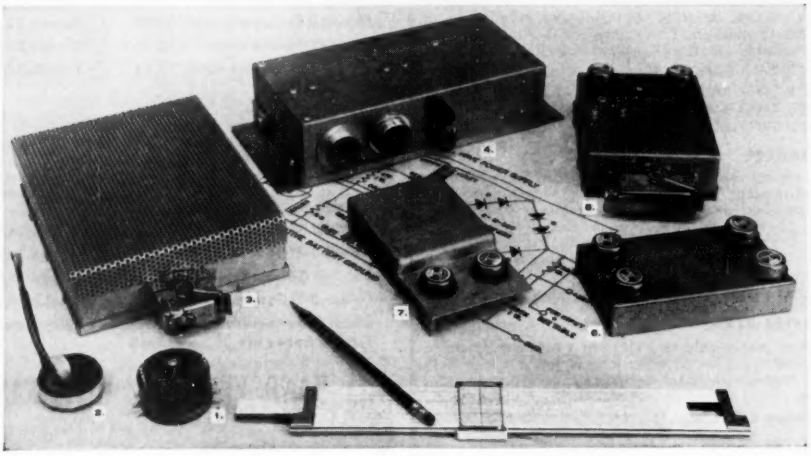

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2. Unencapsulated toroid used for missile telemetering device.
3. Multiple voltage transistor power supply unit designed and manufactured for Military Agency. 12 VDC input, 400 VDC @ 200 ma, 250 VDC @ 200 ma, 200 VDC @ 200 ma, 150 VDC @ 200 ma, -60 VDC @ 100 ma, 5 VDC @ 6 amps, 3 VDC @ 3 amps, all simultaneous.
4. Dynamotor replacement used on famous SUNAIR HF transceiver, 500 VDC @ 250 ma, 250 VDC @ 100 ma simultaneous outputs.
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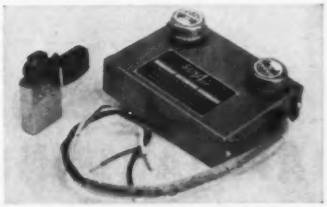

Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at ½ selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap. Size: 4⅜"x 3¼"x 1⅛". Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**

DA SERIES

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H-14-450-12 Input: 12/14-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...55 watts.

H-28-450-15 Input: 24/28-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...65 watts.

H-6-100-125-150-D Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

H-12-100-125-150-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

H-24-100-125-150-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA. Without Encapsulation (2 ozs.) 1 - 10 units: **$12.00** ea. With Encapsulation (3 ozs.) 1 - 10 units: **$14.50** ea.

HD SERIES — 2000 CPS

HD-14-225-300-2-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

HD-28-225-300-2-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3½ ozs.). 1 - 10 units: **$14.50** ea.

With Encapsulation (4½ ozs.). 1 - 10 units: **$17.00** ea.

HDS SERIES — 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

HDS-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1 - 10 units: **$17.00** ea.

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400 CYCLE SERIES

14-115-1.5-400 Input: 12/14-VDC. Output: 115-V at 1.5 amp.

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Station Activities

(Continued from page 82)

Poconos. K2HHJ is QRT because of antenna trouble. W2REB and son K2MPV worked 30 states in the recent 50-Mc. opening. K2UQD is SJRA's Low Frequency Contest chairman. K2HPJ has been assisting the SJRA's *Harmonics* editors. Very fine Official Observer reports were received from K2CPR, W2EIF and W2KFC. K2-KGJ, Edison Award winner, was SJRA's August speaker. W2EH is now K3FH, Levittown Pa. No reports were received this month from Atlantic or Salem Counties. Traffic: W2RG 131, K2DEI 47, W2ZI 27, K2JJC 22, W2BZJ 17, W2BEI 10, K2SOX 10, W2SXV 10, WA2AXP 8, K2CPR 2.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2GBX. RMs: W2RUF and W2-ZRC. PAMs: W2PVI and W2LXE (v.h.f.). NYS C.W meets on 3615 kc. at 1900, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, IPN on 3980 kc. at 1600. W2KEL and K2JZM are new OBSs. K2KTK is now OO Class IV. K2QPC has been endorsed as OES, W2EWO as OO Class II, W2ZRC as ORS and RM, K2EED as EC for Hamilton County. On Aug. 3 WA2BBK, K2KSJ, K2MPJ and K2ZIH completed a 51-hour Marathon QSO on 10 meters. Hearing about this spurred K2DGU and WN2EAF to 60 hours 2.5 minutes to break the record on Aug. 13 via 2 meters. Both events got local press and TV coverage. The NYS C.W. Net had its picnic at the home of K2RYH. Among those present were K2AOQ, K2GQU, K2RKY, K2RYH, K2SIL, K2S8SX, K2UTV, K2UZJ, K2YTD, W2ATA, W2EZB, W2FEB, W2HKA, W2MTA, W2TPV, W2YGW and WV2ETH. W2RUF managed the affair and everyone enjoyed the barbecued chicken. K2RTN has a new vertical for 10-40 meters. W2RQF reports new GG 500-watt rig on s.s.b. K2UZJ has a DXCC score of 62/48. K2EE got a nice write-up as the area's oldest ham. Congratulations, Walt! K2BSC reports that Herkimer County has a complete emergency truck and station assembled by the Mohawk Valley RC. W2VDX and W2EWO report the addition of a third harmonic—a boy! W2BKC has acquired a BC-221 for his OO duties. W2UCZ and W2THG are mobile with Gonset IIs. A great many hams in Western New York are up in arms over the State of New York's reversal on ham license plates. Write to your State Representative. With over 4000 hams in our section we should be able to register a pretty effective complaint. W2CTA takes over as Monroe County Radio Officer. Ex-8TQV has renewed his 30-year-old ticket with the call WA2HPO. New officers of the Rochester V.H.F. Club are K2RZI, pres.; K2UXF, secy. WV2GCH is making club buttons for the CVARC. WA2ALO made BPL on originations plus deliveries. Traffic: (Aug.) W2EZB 469. W2RUF 188, K2UZJ 153, WA2ALO 138, K2GWN 124, K2S8SX 121, K2IMK 117. K2SIL 114, W2TPV 105, K2RTN 103, K2JBX 76, W2FEB 73, K2AOQ 71, WA2BEU 71, K2IYP 64, K2MES 56, W2MTA 55, W2OE 51, W2RQF 33, K2MEF 21, K2EQB 19, K2OFV 17, K2BBJ 14, K2EE 13, W2PGA 12, WA2DHH 11, K2EQB 11, W2ISJ 6, K2-RWV 6, W2PVI 3, K2HUK 2, W2ZRC 1. (July) K2UZJ 94, K2GWN 66, W2PGA 45, K2MEF 31, W2FEB 26, K2NNZ 12, K2MES 4.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA. RMs: GEG, NUG and LXU. It is with deep regret that we have to report in this column the death of AER. Chris was an amateur who built all of his own gear and was very active on 20-meter phone. He held the following appointments in the League: PAM, OO Class I, OPS and ORS. Chris had been ill for several years and will be missed very much by his amateur friends. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The PFN meets Mon. through Fri. at 1800 EST on 3850 kc. K3-GHH received his Conditional Class license and now is operating an AT-1. ZHQ received the Keystone Award. WRC and WRE vacationed in Michigan. KUN is moving to a new QTH around Emporium. The Greater Pittsburgh V.H.F. Society (formerly called Pgh. Six-Meter Net) holds meetings the 2nd Sun. on alternate months at the East Liberty YMCA and is on the air Mondays at 7 P.M. local times on 50.4 Mc. On July 19 the Steel Cities Region of the Sportscar Club of America held a Road Rally which was completely controlled by amateur radio. RFX was rally master; LMM, chief scorer; OVM, main control; and AOH, MDN, NUG, QJJ, K3BFJ and K3DKD working as check points. K3-CLX is chief engineer at WMLP. The Etna RC reports via *Oscillator:* K3GEO and K3GEP are a father-and-son team; GJY took in the ARRL Southwestern Division Convention in California; JT is recuperating after an eye operation; LMM has 232 countries confirmed. Up Erie way: LSS is a trustee for K3ERK, the Boy

(Continued on page 102)

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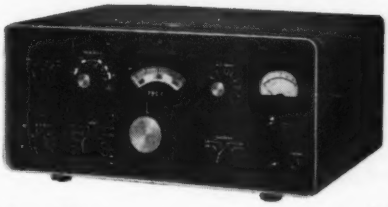

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Scout station at Camp Sequoyah; Operation Inland Sea was a very successful venture in communications with QN and K3OCR working on phone. KNs IGO, IGN and ITE attended the Warren, Ohio, Hamfest and came home with some of the prizes. Traffic: (Aug.) K3CLX 205, W3ZEG 67, KUN 54, K3ICN 35, W3BWU 11, WRE 8, K3COT 4. (July) W3LSS 48, YOZ/3 4.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PRN —Asst. SCM: Grace V. Ryden, 9GME. SEC: HOA. RM: PCQ. PAM: RYU. EC Cook County: HPG. Section net: ILN, 3515 kc., Mon. through Sat. at 1900 CST. The ILN cleared 207 messages in 24 sessions during August. The Sangamon Valley Radio Club provided radio communications for the Annual Yacht Club National Regatta in Springfield over the Labor Day week end. K9OXW has finished building a new Eico transmitter and is now on phone. K9LON soon will be on 20-meter c.w. from the State University of Iowa, his QTH for the school sessions. K9PLF's new HQ-160 helped him bring in an FB traffic total. The Starved Rock Radio Club has a battleline drawn up in the form of an SS contest. NIU has returned from Denver, where he attended the National APCO Conference, which is composed of police operators. K9BGL is a new member of the DXCC. KN9RNX, KN9TDL and KN9QNK are new YL hams in the St. Clair County Area. Other new calls heard: KN9SSO, KN9RKT, KN9QNS, KN9TDX and KN9-SXO. K9PLF, Activities Manager of the Northwestern University Amateur Radio Society, reports that the club has acquired an all-new antenna farm for all frequencies. K9QYY is the new EC for Winnebago and Boone Counties and K9COB is the new EC for Moultrie County. K9OCU received his WAS and WAC certificates. K9IXB's new QTH is Indiana. IAW is back in Champaign after a rest in sunny Florida. The Peoria Area Hamfest held in Peoria County was well attended and some nice awards were given for "Do It Yourself Exhibits" and "Most Unusual Hobby or Collection Exhibit." K9HWC has a new 220-Mc. antenna set-up. The 6-Meter Club of Chicago, in cooperation with RACES, provided communications for the Pan-American Games. JJN has joined the 1st-class radiotelephone gang. MAK received his DXCC certificate. K9JBK and K9JXO QSOed for 52 straight hours on 6 meters. The Illinois amateurs send their sympathies to HPJ, who recently lost his wife. K9IDN is the very proud father of a baby boy. UCZ reports that he received his WAS certificate, while LGH received his WBE award. Major Glenn Kelly, K5KHJ, has been appointed Base MARS Director and Willie Wilson, 5DTA, is chief operator of Scott Air Force Base at Belleville. Our very best wishes to the president of ARRL, Goodwin L. Dosland, ØTZN, and his very lovely bride, Mary G. Palmer, 5DEW (the Dew Drop of Texas). PLS is building a new Apache. Traffic: (Aug.) K9AIR 2562, W9DO 1056, USR 215, PCQ 201, MAK 198, K9PLF 136, MHW 130, W9FAW 126, SXL 52, JXV 43, K9LXG 32, W9IDA 22, LGH 17, PRN 8, JJN 4, K9BIV 3, MDK 3, OCU 3. (July) K9ISP 8. (May) K9LON 8.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: SNQ. PAMs: BDG, BKJ, MEK and UXK. RMs: DGA, TT and VAY. Net skeds: IFN (a.m.) 0800 daily and 1800 M-F on 3910 kc.; ISN (s.s.b.) 1900 daily on 3920 kc.; QIN 2000 daily and RFN 0800 Sun. on 3656 kc. and QIN (training) 1800 M-W-F on 3745 kc. SFU has been appointed as EC for Hendricks County. JOZ has been appointed as RM to assist VAY with the QIN Training Net, which has become very active with this month's traffic total of 121. Three new Gen. Cl. licensees who have been very active in this net are K9PDE, RMQ and SKR. NTA reports that the Martinsville ARC is building 6-meter portable rigs. WDQ, secy., reports that a new club has been formed in Goshen. It has had a good attendance and is starting code classes. PQQ is on 147.3-Mc. f.m. along with the rest of the northern half of Indiana. K9IIJ has a new 3-band ground plane. K9BSU is building a linear using 811As. The Hammond c.d. group is outfitting a trailer for emergency communications. ETM has a 30-D rig on 147.3 Mc. K9JWJ put up a new 10-meter beam. K9GSV reports three new Gen. Cl. licensees in Lake County—K9MAN, PGA and SHT. K9-IXD worked CO2RR, Cuba, on 6 meters. FJR is building a 100-watt rig using 1625s. IFZ and EKW are building rigs for 220 Mc. and will be on soon. K9BEH has 36 states confirmed on 6 meters using only 15 watts. K9ADJ is operating /9 in Lincoln, Ill., while attending Bible School. OJA operated portable from the Owen County Fair. QIN had a big month with a traffic total of 499. BDG reports IFN traffic as 396. RFN traffic also picked up with a total of 141 reported by TT. MEK gives ISN traffic count at 85. PAQ reports that the Ft. Wayne 6-Meter A.M. C.D. Net handled 19 formal messages. K9KSP is starting a teenage phone net on 3900

(Continued on page 104)

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kc. It will meet Mon. through Fri. at 1630 EST. K9AYI, BBO, BSU, W9DGA, ETM, NZZ and TT made BPL. Traffic: (Aug.) W9NZZ 1077, K9BBO 589, AYI 503, W9TT 503, VAY 344, ETM 185, K9BSU 171, W9DGA 112, K9JWH 111, W9BDG 100, FJR 88, K9LBD 77, IXD 71, W9SWD 67, K9IHG 44, W9RTH 40, EJW 37, K9GBB 36, W9MEK 36, K9JKK 30, PDE 29, W9EGV 27, GJS 24, RVM 24, KN9TCG 23, W9TQC 21, ZPP 21, CLF 20, CC 18, DOK 18, HUF 18, JZU 17, K9LZJ 16, W9SNQ 16, NTI 12, FWH 10, YYX 8, BDP 6, IMU 6, NTA 5, KN9TYM 3, K9IIJ 1. (July) W9PMT 45, IMU 14, K9HMC 12, W9OCC 6, DWK 4, K9GSV 2.

WISCONSIN—SCM, George Woida, W9KQB—SEC: YQH. PAMs: NRP, GFL and K9IQO. RMs: SAA and K9ELT. K9GDF advanced from Class IV to Class II OO. New appointees: K9GSC as ORS, K9OXY as OES, K9LCA as OBS on 7.1 Mc. Fri. 2200, Sat. 1200 and 2200, Sun. 1100 CST. K9HDL received his BEN certificate. DYG and K9DAC received BPL certificates. CCO has a new 10-meter beam. While DXing on 20 meters, NLJ "flipped" on hearing UR1LID. KQB's XYL received a Northwoods "Woofhong" from the 2-watt mobiler OTL. SZR reports the Madison V.H.F. Net meets Thurs. at 2000 on 50,100 kc. with K9HEK as NCS. KJJ is attending California Institute of Technology. RQM operated mobile from 14 states plus Mexico while on vacation and now has operated from all call areas plus VE3 and kept a sked with JBF from all. He met ADM and LGR in Arizona by coincidence. BCC continues to control the RACES nets on Sun. mornings and requests that more c.w. operators become active. KXK is at 245/239 DX-wise and reports KN9SNO is new in Waupaca. The Waupaca Club celebrated its first birthday and elected VWX, pres.; K9LWV, vice-pres.; KXK, secy.-treas.; DYR, act. mgr. OES GAB has a miniature 432-Mc. parametric amplifier in use. GZK now is hearing 'em on a new 75A-4. YQH is sporting a pushbutton remote-control mobile whip. PST and K9HGJ have WAC. K9RRS is looking for 6-meter s.s.b. stations to form a net. Nov. 1 is the date of the Fond du Lac Club's banquet. You're all invited. Wisconsinites known to have attended the St. Louis Convention include GPI, CUW, FDX, OMZ, EWC, GIL, DYG, KQB and K9CAN. A Happy Thanksgiving to you from the Radio Amateurs of Wisconsin. Traffic: (Aug.) W9DYG 920, K9DAC 548, W9CXY 334, K9DTK 118, GYQ 84, W9KQB 57, OTL 46, CCO 42, YT 40, NRP 37, K9DOL 28, W9VHP 20, LFK 17, SAA 16, K9PDJ 12, GSC 8, W9SIZ 8, VIK 7, CBE 6, K9IQO 5, CJL 4, LWV 4, W9RQM 4, RKP 3, K9JQA 2. (July) K9DAC 223, LWV 69.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold A. Wengel, WØHVA—SEC: KØJLW. RM: KTZ. PAM: KØKJR. KØCNC is living on the campus at Jamestown college and is not on the air as much as formerly. JPW has been using a new S-Line rig for several months. KØAZX is now sideband after wiring a Heathkit SB-10, and JLW has a Cheyenne from Heathkit in his car. New calls in the Bismarck Area are KØBOT, KØSNV and KØKAF. KAF is on 20 and 40 meters with a beam atop his house. HVA and family vacationed in South Dakota, stopping for visits with OCX, KQO and NIW. How about sending some news from other parts of the State, fellows? We seem to print news from the same places each month. Traffic: KØMPH 21, GRM 13, WØKTZ 9, KØADI 8, RMS 8, RLF 6, CNC 4, CMX 3, PLY 2, PVH 2, MBG 1, MHB 1.

SOUTH DAKOTA—SCM, J. W. Sikorski, WØRRN—SEC: SCT. Net controls report they are "hurting" for outlets from Mitchell, Pierre, Yankton and Vermillion. The c.w. net needs more participation to be successful. KØLXF has moved into a trailer home near Dell Rapids. KØDPD, Huron, recently was married. KØLXH is operating with a "new" SX-25. MFF, formerly of Goodland, Kans., is operating from KØFCR, Ellsworth AFB. KØZAD, Garden City, has completed installation of a G-66 and a "Bantam" 65 in his Chevy. KXZ, Brookings, swapped his converter for a PMR7 and added a new power supply to the mobile. Newly-elected officers of the Mines ARC are IUK, pres.; KØCMX, vice-pres.; KØMRN, secy.-treas.; SGM, trustee. The club holds a weekly net on 3900 kc. at 0700 CST, Fri. KØACJ, formerly of Lead and Cannon City, Colo., now is located at Piedmont. DVB taught code classes five days weekly during June, July and August and is now holding classes once weekly. New licensees in Sioux Falls are KNØWEM and KNØWEN. KØOXU is sporting a new Valiant transmitter. SCT is attempting to get an EC for every county in the state. Volunteers will be appreciated as promptly as possible. Traffic: WØSCT 335, KØBMQ 60, WØDVB 29, YQR 27, ZWL 14, KØQPK 13, WØZLB 8, KØDUR 4, WØOFP 4, KØAIE 2, DHA 2, WØFJZ 3, KØINZ 2, LKH 2, LJQ 2, WØNNX 2, KØOXU 2, RQY 2, KLR 1.

MINNESOTA—SCM, Mrs. Lydia S. Johnson, WØKJZ—Asst. SCM: R. O. Hall, ØLST. SEC: TUS. RMs: RIQ and KØIZD. PAMs: QVR, TCK and TUS. Thank you, LST, for last month's column. NYM operated portable in Dodge and Houston counties for WAM. IRJ will live in Duluth. WMA received the Traffikers 1000 award. RA has a Pacemaker on the air. SLD handled emergency Red Cross traffic after the Yellowstone earthquake. The Twin City mobile operators efficiently handled the National American Legion Parade. Former MSN member RJF, of Wichita, Kans., visited many of the Twin City hams. DL4SII called on URQ and KJZ on his way to Lowry AFB, Colo., where he will be stationed. KØIDV and GCN renewed their ORS appointments. Twins QXA and QXF attended the National Twin Get-together at Des Moines, Iowa. KLG completed wiring and testing his Seneca V.H.F. rig. Bob has a five-element Hy-Gain beam on 6 meters. Two new ECs are KØJYJ and IKU. VTZ renewed as EC and KLG as ORS. KØMEQ reports that his daughter will enter nurse's training at Marquette this fall. UYR stated that the Suburban Radio Assn. mobile units helped with communications for the auto races at Bloomington Stadium. WOM has a new NC-300. FKT is active in the CAP. KØLWK's XYL is KNØVPJ. The 6-Meter Net meets Sun., Wed. and Fri. on 51 Mc. at 2100 CDT. Our slow-speed net, MJN, meets on 3690 kc. at 1700 CST Mon., Wed. and Fri. MJN's NCSs are KJZ, RIQ and KØIZD. The MARC picnic was attended by 100 statewide hams. Equally as successful were the annual picnics at St. Cloud, Minneapolis and St. Paul. Our deepest sympathy to CQY, whose 18-year-old son George, ex-WNØTVD, died from injuries received in an auto accident. Also we extend our sympathy to TUS, our SEC, whose father died in Webster City, Iowa. The following supplied communications via 6 meters for the Annual Boy Scout Canoe Derby: IQW, COS, PQS, KØPSI, CPW and EVW. Results of the Aquatennial Canoe Races were relayed daily to the press and radio by HEN, BUO, OPX, OJK, MPG and MAH. Dr. H. J. Baldes, Professor of Biophysics, spoke at the Rochester Amateur Radio Club meeting, which was attended by 63 licensed amateurs from the 100 in attendance. Vice-Dir. and XYL, Asst. SCM and XYL and the SCM were present. Traffic: (Aug.) WØRIQ 147, TUS 135, OPX 106, WMA 87, HEN 76, KØGIW 75, WØKJZ 68, KLG 62, KØIDV 49, WØKYG 47, LST 45, MGT 43, BUO 42, UMX 38, EPT 33, IKU 33, KFN 32, SNC 30, QLM 27, MPG 25, ALW 24, OET 24, QVR 19, KYK 16, TCK 15, JYJ 14, OJG 14, OJK 12, IZD 11, MAH 9, PET 8, SZJ 4. (July) KØOIW 37, EPT 30, IZD 15, WØUYR 4, KØMEQ 2.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: K5CIR. PAM: DYL. RM: K5TYW. We are very glad to have BYJ back in Arkansas and active once again on all of the traffic nets. FB recently built a linear for his new S-Line exciter. AUU has up a new 100-ft. pole topped off with a new 10-15-20 meter Telrex beam. K5KQD now is operating s.s.b., so we hear. K5HOL has a new eight-element beam up for 6 meters and has a new transmitter and converter to go with it. K5GOW reports continued interest in the 6-meter net and urges more to participate. The net meets on 51 Mc. at 2000 Tue. and Thurs. CAC has a BC-221 frequency meter to go with his new appointment as OO. We notice that RACES operation is picking up in this section. We would like to urge all counties to be active. The Arkansas Civil Defense Hq. at Conway has purchased a new KWS-1 and a 75A-4 for use on the RACES frequencies. During the day 3993 kc. is monitored. Don't forget to support the NTS and your local traffic nets. Traffic: K5TYW 73, IPS 12.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—For about two years now, the Louisiana section has been without a Section Emergency Coordinator. Emergency Coordinator activities have been pretty low over the State with the exception of Lafayette, Lake Charles, Westside New Orleans, Shreveport and occasionally Monroe. No one seems willing to accept and carry on the duties of SEC. All inquiries are answered with "Don't have the time," "Don't think I can handle it." Everytime the SEC list is printed in *QST*, Louisiana is conspicuous by not having a person listed for the job. Reports from the ECs come in each month and they need processing, tabulation of activities and a report to ARRL. Requests for AREC membership pour in and there is no Coordinator to take care of them. How about a good man to take care of this job? I suggest that the various clubs send in their candidates for SEC and also for local EC so that we can have a good emergency program to cope with the hurricane and other disasters that hit the State from time to time. Let's get going! A nice letter was received from KN5WOD, who became interested in radio while operating a net control station

(Continued on page 106)

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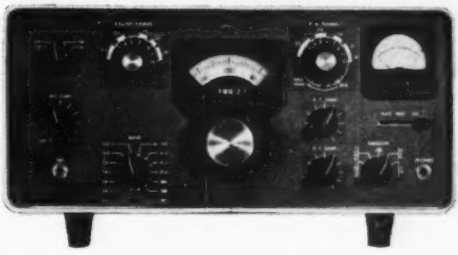

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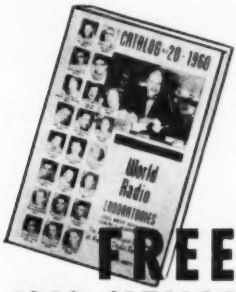

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in the Army during WW II in Europe. He is looking for c.w. traffic nets on 80 meters. K5BYA and K5BYB will be operating from St. Joseph's Seminary up until about Christmas. BYA says he muffed the code test for Extra Class. CEZ nearly made BPL answering roll calls on four nets. Traffic: W5CEZ 419, MXQ 275, KN5WOD 5.

MISSISSIPPI—Acting SCM, Thomas C. Pate, K5HYO—We are sorry to lose EHH, our SCM, to World Radio at Council Bluffs. The Cleveland ARC gave him a nice party before his departure. The Post Office Net got under way in Mississippi Sept. 7 at 2000 on 3885 kc. K5JLX, Lowns County EC, has purchased a jeep and equipped it with emergency communications equipment. DLN and HYO were recent visitors to Council Bluffs. VGF has purchased a new Globe King 500C and an HQ-160. HPX has moved to Greenville. SQS is a proud grandfather. EEC is back on with his 400 Globe King. TXZ is on vacation in Texas. HYO has put up a 20-meter beam. NRU reports the Miss. Mag. Emergency Net held 26 sessions in August with an average attendance of 30 per cent. QAL, WTT, LWQ, LWP, 5GUU and 5ART were very busy keeping up with the boat marathon on the Mississippi River. Traffic: W5SQS 33, HYO 15, NRU 12, MFY 11.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—SEC: RRV. RM: FX. PAMs: PAH and UOT. RRV announces an AREC training net operating at 10 w.p.m. on 7075 kc. at 2130 EST on Tue. and Thurs., with K4OUK as NCS. FX reports an increase in C.W. Net activity and that K4AMC is a new NCS. OGG gave a talk on Regional Net Activities at the ARRL Central-Midwest Division Convention. 5RCF has been in the Navy Hospital in Memphis. We will be glad to have Mac back when he is able. K4ILU reports he worked 4 stations while using ½ watt. JVM says he still is working on transistor 6-meter receivers. UVP's 6-meter score is now 40 states. Congratulations to BPL winners PL, 5RCF and K4CNY. Traffic: (Aug.) W4PL 1223, W5RCF 1025, K4CNY 297, W4OGG 164, FX 78, VJ 76, PQP 54, UVP 54, CXY 44, UIO 38, EIN 35, NHT 30, K4OUK 22, W4TDZ 15, UVL 15, PAH 13, JVM 12, HBZ 8, K4RSU 8, W4TYV 8, K4TYZ 8, W4LLJ 6, K4ILU 2. (July) K4KYO 28, W4TDZ 10.

GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thomason, W4SUD—Asst. SCM: W. C. Alcock, 4CDA. PAMs: GTC and K4MMW S.S.B. PAM: MMY. V.H.F. PAM: K4LOA. RM: K4CSH. There was a lot of interest in inter-section 6-meter contacts during August. K4LOA reports he is keeping several weekly schedules with good results. BAZ is relaying traffic regularly to the Covington Area. VJV reports many ground-wave and DX contacts on 6 meters. ADH has a 300-watt 50-Mc. transmitter. Keep your V.H.F. PAM and SCM informed of your v.h.f. activity. EC VJV took his AREC group to the Daviess County Fair where traffic was accepted from the public. This is good public relations and a lot of fun. Ask your EC or club to plan a similar project. K4BPY worked 25 stations in the *CQ* V.H.F. Contest. K4ZIQ is leaving for a Navy hitch. K4TXP has a new Tribandbeam. A new OBS is K4IFB. Listen for ARRL Bulletins just before KYN daily. K4AVX, Hazard, is new on KYN. An OO report was received from K4BUB. Traffic: W4ZDB 308, K4JOP 260, CSH 170, W4SUD 79, GTC 52, K4DFZ 43, MMW 42, W4CDA 18, SZB 16, NUQ 15, KJP 13, MWX 13, YYI 13, K4ZML 13, AVX 12, ZIQ 12, W4ELG 7, K4IFB 5, MPV 5, W4HTD 3, ADH 2, K4BPY 1, KN4IMF 1.

MICHIGAN—SCM, Ralph P. Thetreau, W8FX—SEC: YAN. RMs: SCW, OCC, QQO and FWQ. PAMs: AQA and NOH (v.h.f.). EC appointments went to CRH, TOX and WFA; ORS to RTN; OO to: EMD, HPR, IWV and K8KCO; OBS to: K8GUE, K8ICE and K8KCO; OES to EMD and K8IWF. The BR/MEN and QMN Nets are all set for the fall season. The Upper Michigan Net has started on 7055 kc., reports EOI. K8GKX reports the Hillsdale ARC has been going for 2 years, with 16 members. A new 160-meter AREC net has been formed in Shiawassee County. Berrien County is building a new c.d. communications bus, with 2 amateur positions in it. K8GJD made WAS. K8LPV has a new RME 4350-A. K8KMQ "digs up" a dozen UV sockets for the OT VT collection. K8AEV went to the CMARC Lansing Ham Picnic in his '21 Stanley steamer! On Aug. 16 many 50-Mc. aurora reflection contacts were made, using c.w., by EMD. WVL announces the birth of his first jr. operator, a YL. On Aug. 24 PT worked 2EJO for his 8th state on 220 Mc. 3WRE and her OM, 3WRC, visited FX, with OT keys and bugs for the pix collection. MGQ is putting up a trap vertical on the apartment roof. FWQ operates K8EPV as AREC NCS on 29,590 kc. at the Red Cross St. Clair County emergency station. Traffic: (Aug.) W8OCC 250, FWQ 175, K8BQD 94, W8QQO 71, FX 63, YAN 61, NOH 46, RTN 27, K8GJD 22, AEM 19, W8AUD 18, HKT 17, K8LPV 15, W8FDO 14, DSE 13, QIX 10, ILP 9, K8KMQ 9, W8TBP 8, SCW 6, SWG 6, K8CIS 5, HLR 4, W8RVZ 4, EU 3, EGI 2, K8KCO 2, KVV 1. (July) K8AEM 30, W8RTN 29.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. E. Erickson, 8DAE. SEC: UPB. RMs: DAE and VTP. PAMs: HZJ and WYS. AQ vacationed in Maine. DAE, UPH and K8HGT made the BPL in August. OUU graduated with a Master's Degree from Ohio State U. New appointments are: NKG as OES; K8s GNG, IKE and KPP as OOs. GBH has a new three-element Hy-Gain 15-meter beam. K8LDD received his General Class license at the tender age of nine years. Did anyone receive theirs at a younger age? Your SCM attended three hamfests. The first was the Buckeye Net Annual Picnic in Mt. Vernon at which DAE, one of our RMs, told of plans for the better handling of the traffic which was discussed by all concerned. The second was the Green Valley RC of Alliance Hamfest, with 215 amateurs registered and more than 300 attending. The speaker was the Lt. Gov. of Ohio. Also a tape recording of Dr. Lee DeForest speaking on amateur radio was heard. K8OFX was awarded the SX-101 and BKS an antenna rotator. The third was the Warren ARA's Hamfest with about 75 amateurs registering. HPT has joined Silent Keys. IBX received the CAA and WPROS awards and visited NGW. Columbus ARA's *Caracope* informs us that K8DEU received a card from ZE2JE, whom she worked on six meters; the club held its annual picnic with about 220 registered. K8IJZ has a new tower and four-element Telrex beam. TIF is in the Navy and toured the Mediterranean Sea. Toledo's *Ham Shack Gossip* named VSB as its Ham of the Month and tells us that K8LSH received her General Class license. The Cuyahoga County AREC used 10 and 6 meters with mobiles and portables to call scores to two scoreboards at the 18th hole of the Carling Open Golf Tournament and later helped the State Police clear out a huge traffic jam of autos several miles long after the Tournament. AEU, AOA, BAH, PVQ QLB, QXG, SNW, SUS, TFW, UDO, UZJ, ZEP, GHI, HXL, IDN, JBS, KYT, LHX, NNX, OHA, PKB, HCS, IHE, IHZ, IPI, IZL, JHZ, JIC, JSE, KEU, KKO K8's: AAG, AOE, AWF, BVI, BWH, DHX, GVK, KNJ, MBV, MBW, MME, MSB, NPI, NUA and OPV took part. DAE continues sending articles published in the *Cleveland Plain Dealer* on amateur radio and what we do for the public edited by BAH. The Buckeye Net operates on 3580 kc. starting at 1900 EST every evening of the week including Sunday. It has messages practically every evening for Cincinnati without a station in that major city to take them. What is the matter with you Cincinnati boys that the people of your fair city are deprived of a major service we can give them? About twenty years ago UPB told me BN needed an outlet in Canton. Whereupon I've been in BN ever since, cutting down my chances to get new DX countries on 10 meters or to have a QSO on another band. With Thanksgiving, Christmas and New Year on the way, we need an outlet in Cincinnati. If one station there cannot make it every evening why don't three or four of you boys take one night a week and maybe one or two take a second evening. This plan would help out a lot, so *please* and *thank you*. Traffic: (Aug.) W8UPH 1642, DAE 369, ZYU 170, K8HVT 135, DHJ 131, HGT 129, W8QLJ 114, K8CTQ 97, GVV 72, W8IBX 52, AL 24, CTZ 24, SYD 13, K8BPX 12, GPI 11, HDO 11, HYJ 10, W8HZJ 10, K8GWK 9, W8LZE 8, K8MHO 8, JIX 7, W8BEW 6, K8HEJ 4, W8LMB 4, SBN 1. (July) W8LUS 159, K8JIX 30, W8SYD 9, GBH 4. (June) K8DHJ 56, GVV 43.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W2KGC. RM: W2PHX. PAMs: W2IJG and W2NOC. Section nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800. IPN on 3980 kc. at 1530, ESS on 3590 kc. at 2130. ENY (emergency) on 29.490 Mc. (Thurs.) and 145.35 Mc. (Fri.) at 2100. MHT (Novice) on 3716 kc. Sat. at 1300. WA2EKE has been appointed as OES and OBS. Our congrats to K2UTV, who made BPL. The Schenectady Club has the call K2AE in memory of the "Dean," Henry Broughton. W2FBS is trustee. An average error of 52.1 parts per million was received by W2DIX in the last F.M.T., well within Class I OO which requires 71.43 to retain status. Congrats, Joe. K2YTD/1 made BPL from E. Mass. while at Boys' Camp in Lenox. Dick really was busy handling their traffic. Although inactive for three weeks in August, K2YZI reported 130 total traffic! All N.Y.S. hams owe thanks to W2AAO, W2APF and W2GTI for their efforts in attempting to secure those special license plates, which are "out" for this year and perhaps next. The Albany Club reports 111 paid members. Uncle Dave, W2APF, wrote 80 pages of manuscript on his "Around

(Continued on page 108)

HERE IT IS AT HARVEY

THE NEW COLLINS KWM-2 TRANSCEIVER

Distinctive modern styling and easy mobility make the lightweight KWM-2 an attractive unit for the CAR BOAT AIRPLANE or fixed station.

Featuring operation on all bands between 3.4 mc and 30 mc on either voice or CW, the KWM-2 has the quality and performance of the time-proven KWM-1 and famous Collins S/Line.

Filter type SSB generation and crystal-controlled double conversion also are features of the KWM-2, in addition to VOX and speaker anti-trip circuits. ALC keeps the signal adjusted to its rated PEP resulting in an increased average talk power.

The KWM-2 is easily moved between mobile and fixed station installations. For mobile use, the transceiver slides into the mount and the power, antenna, selector and car radio speaker plugs connect automatically. These same four connectors are used in a fixed station installation.

The KWM-2 mobile transceiver transmits on SSB or CW with a nominal output of 100 watts for complete coverage on all amateur bands. Any of fourteen 200 kc segments of the 3.4-30.0 mc frequency range may be utilized except the 5.0-6.5 mc range on transmitting. Other frequencies (such as MARS) outside the amateur bands may be obtained by inserting the proper crystals.

PRICE — **$1095.00**

Type/Description		Net Price
516E-1	DC Power Supply	$262.00
351D-2	Mobile Mount	$110.00
351E-4	Mounting Tray	$14.45
516F-2	AC Power Supply	$105.00
SC-301	Antenna Control Console	TBA
312-B5	Speaker Console	$333.00
30S-1	Linear Amplifier	$1470.00
136B-2	Noise Blanker	$120.00

For complete versatility in either fixed station or mobile use, Harvey has a full line of Collins accessories for the KWM-2.

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HARVEY is known the world over, as a reliable source for Ham Equipment. All orders shipped same day received. If you want to talk SWAPS and DEALS write or call **W2DIO.**

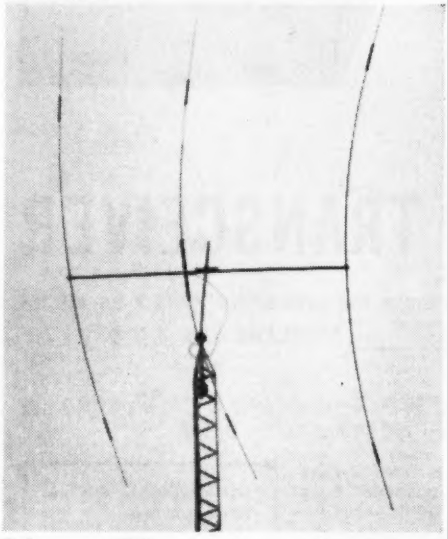
There's No Biz Like Ham Antenna Biz! . . .

Our apologies to Ethel Merman, Georgie Jessel, Tin Pan Alley, *et al*, but there is a striking similarity between their business and ours. We, too, get an occasional over-ripe cabbage tossed at us. (Like all good troupers, though, we don't duck because the produce thrower's aim is most always way off!)

But these gratuitous discourtesies are overwhelmed by the *kudos* that constantly come our way. Why they make working almost fun! Some days we go home positively glowing—and we haven't stopped off somewhere, either!

Like yesterday, for example . . .

Bob Hoffer, K9KKK, sent us a card and a snap-shot of his MOSLEY Trap Master Beam. Here's the snap and we quote *verbatim* from Bob's card:



Bob says, *"The picture was taken during a 50–60 mph wind hr. The beam suffered no damage. It works tremendously for me. The beam is at 70 feet. Make mine Mosley."*

Since Bob—in addition to obviously being a fine fellow—is crowding DXCC, has WAC Phone, WAS Phone and goodness knows what all, we think his opinion of our Trap Master Beam means a great deal.

That picture isn't to be sneezed at, either.

Mosley Electronics, Inc.
8622 ST. CHARLES ROCK ROAD
ST. LOUIS 14, MISSOURI

the World" trip for the Albany Club Paper, *B-Plus*. The briefed report was interesting reading in the Aug.-Sept. issue. K2HNW has returned from California after a year's absence to his job as professor at Union College. The Northeastern DX Assn. has been started by W2DSU and W2FBS with W2DGW as publicity man. For complete information, contact W2DGW. The new Schenectady Club officers include W2LCB as pres.; supported by K2SPP, K2QJL, W2GRI, K2IOW and K2IDMR. Traffic: K2UTV 4161, K2YZI 130, W2ATA 73, K2MBU 57, K2-RY 51, W2EFU 47, W2PKY 24, K2OZT 22, K2YTD 15, W2VEF 8, K2VCZ 5.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2-VDT. PAM: W2UGF. V.H.F. PAM: W2EW. Section Nets: NLI, 3630 kc. nightly at 1930 EST and Sat. and Sun. at 1915 EST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST; NYC-LI AREC, 3908 kc. Sun. at 1730 EST; V.H.F. Traffic Net, 145.8 Mc. Tue., Wed. and Thurs. at 2000 EST. It is my pleasure to announce the appointment of W2EW as the section's V.H.F. PAM. Hank takes over from K2EQH who, as our first V.H.F. PAM, did so much to help our V.H.F. Traffic Net get started. Many thanks, Smitty, for your service. W2EW's first official request is to extend a special invitation to all Technician Class licensees to join the V.H.F. Traffic Net and enjoy traffic-handling. BPL cards go to W2KEB and K2QBW. K2DEM operated from summer camp in Connecticut. K2QBW received his twelfth BPL award and worked his 101st country to nail down DXCC. WV2BVZ and his XYL welcomed their first harmonic, a YL. K2SJF enjoyed his best traffic month and added some DX, too. W2JGV returned to Vermont for the school months. K2MEM is enjoying a Communicator on 144 Mc. K2TPU joined the 2-meter group with a 522. W2AYJ raised his countries total to 254 confirmed. K2IRS added an NC-173 and a 522 to his station. W2BQM crossed the 200 country mark on phone only with No. 202 recently added. The boys at K2AIR, Mitchel AFB, send their first report in many months. Operators K1NUR, W4DPX and K8BTL share operation of the 75A-2, 32V-2, SSB-100 and kw. linear. K2AZT is enjoying many 220-Mc. contacts. K2DQD will be joining the married ranks in January. K2RKL announces the formation of a new u.h.f. club on Long Island. The main interest is in 220 Mc. and up. Contact W2OTA, K2MGA or K2RKL if interested. With the guidance of K2AMP, the West Islip Electronics Club of the West Islip HS is on the air with a Ranger and an HQ-170 signing WA2GVW. Despite summer heat, the NYC-LIPN had a busy month handling traffic with a total of 379 messages. W2CWD is enjoying mobile operation with the Heathkit "Twins." A new 32S-1 is in use at W2KDC. A new Mosley three-element 15-meter beam joined the RME-4300 and Ranger at WV2GHD. A new call heard from Freeport is WV2HBD. WA2HPC, ex-K1EKE, is active with a Valiant and an SX-71. WA2HQF, ex-KL7CXW, expects to be on the air from Massapequa Park. K2AUI and K2BSL will be particularly pleased to know that their efforts of more than 30 years have finally brought results with the licensing of WA2AWT, an old friend. Herman is active on 6 and 2 meters with a Seneca. W2GXC added a new Apache to his station. WA2EVL has a new v.f.o. and another state on 50 Mc. New officers of the Bethpage RC are K2CQI, pres.; K2LKT, vice-pres.; K2OVN, secy. and K2ULS, treas. The club is 100 per cent ARRL, AREC and c.d. Congratulations! K2OVN repoprts that the Kings County AREC and C.D. 2-Meter Net meets Mon. at 2030 on 145.26 Mc. and welcomes new members. K2RCP announces the formation of the Mid-Island Net on 50.9 Mc. at 1930 each Tue. All interested parties in Nassau and Western Suffolk are invited to attend. K2JWT maintained nightly schedules for a week with W1DXE/1 in Vermont on 144 Mc. using low power. Good luck in the SS. Hope to work many of you. Traffic: (Aug.) W2KEB 3439, K2QBW 551, K2SJF 257, K2DVT 214, K2PHF 176, W2JGV 158, K2RAN 149, K2UBG 74, W2EW 49, K2YQK 39, W2DUS 38, WA2BVH 29, W2LGK 18, K2MEM 18, K2TPU 15, WA2EVL 10, W2AYJ 8, WV2GHD 4, W2PF 4, W2MDM 2, K2IRS 1. (July) K2AMP 151, W2UGF 63, K2UBG 46.

NORTHERN NEW JERSEY—SCM, Edward Hart, jr., W2ZVW—SEC: W2CVW. RMs: W2RXL and W2-ADE. PAMs: K2KVR and W2REH. NJN (3695 kc. at 1900 daily) held 31 sessions with 433 in attendance for 291 messages. The N. J. Phone and Traffic Net (3900 kc. at 1800) held 31 sessions with 677 attending for a total of 96. N. J. 6 held 9 sessions; 139 checked in and handled 30 messages. K2TWZ is working on a 220-Mc. rig. K2VAC left for Fort Dix. K2SLG is NCS for NJPN Tue. W2REH, a new PAM appointee, also has a Tribander on a tower. Hope we don't lose a good traffic man. K2JTU, a faithful postman, is interested in the Post Office Net. K2GIF soon will be on RTTY. K2CBG likes to ragchew except on his card to me. WA2COO acquired

(Continued on page 110)

NEW RME

a division of Electro-Voice, Inc.

PORTABLE CITIZEN BAND RADIO

Completely transistorized, the RME 4303 Transceiver employs a super-heterodyne receiver with input sensitivity of better than 2 microvolts and sufficient selectivity to permit single channel reception. Receiver frequency coverage is tunable over the range of 29.96 to 27.27 mc, which includes all 23 of the Class D Citizens' Channels. Receiver tuning may be locked for fixed frequency operation. It operates with loudspeaker volume.

The transmitter is crystal controlled on Class D Citizens' Channels between 26.98 and 27.26 mc. Power input for transmitter is 90 milliwatts. It employs 7 high gain transistors and 2 diodes. Controls: On/Off and Audio Gain, Receiver Tuning, Push To Talk. Battery complement: 2 Burgess Z 4 batteries (not supplied). Average battery life: 60 hours.

34" whip antenna retracts into case. Dimensions: 2" x 3" x 9".

Weight: less than 2½ lbs. with batteries. Net price: $99.50

Two Z4 batteries: 1.28

HERE IT IS AT HARVEY

NEW RME

a division of Electro-Voice, Inc.

SSB COMMUNICATIONS RECEIVER

The RME 6900 is the product of almost 30 years of high frequency communications receiver engineering. Designed specifically for the serious amateur engaged in SSB AM and/or CW operation, the RME 6900 covers five amateur bands: 80, 40, 20, 15 and 10, plus a 10 to 11 mc band. Slide rule dial presents only band in use, 11½" scale length.

Model 6900 employs a noise limiter which is very effective on both SSB and CW. The receiver employs a separate detector for reception of SSB signals. Its sensitivity is 1 microvolt and drift is confined to 0.01%. Greater selectivity is achieved through a Q Multiplier which operates at 62.5 kc. IF frequencies operate at 2195 kc and 62.5 kc.

Other features include an improved AVC circuit and an S Meter calibrated in 6 db steps. It has an internal 100 kc crystal (hermetically sealed) calibrator. Also, selectable sideband at the flip of a switch. Weight: approximately 28 lbs. Net Price: **$349.00**

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A Word From Ward . . .

THANKSGIVING

At this time of Thanksgiving, I cannot help but think of how much we in America have to be thankful for. There are those, you know, who call us a materialistic people. And yet, our most valuable possessions are virtually invaluable.

Would you, for example, take any amount of money to sell your American citizenship to a foreigner—even if it were possible?

What's the current market value for freedom of speech nowadays? Have you ever thought of that? Here, in the U.S.A. we get it for the asking. But there are other parts of the world where you pay for that little commodity with your head.

How about freedom of religion, of assembly, of education? How about the freedom to write a personal letter to President Eisenhower, bawl out our congressman, listen to a crackpot or boo at a picture of Marilyn Monroe—if we have a mind to?

Nowhere else—in no other corner of God's green earth, do so many people have more to be thankful for than we happy, sober, brainy, cockeyed, wonderful Americans have.

Ward J. Hinkle W2FEU

Before you buy or trade, wire, write, call or drop in to see WARD, W2FEU

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Phone: Victor 2-8350 Ward J. Hinkle, Owner

a new bug. K2UCY has been giving code practice on 2 meters. WA2CCF handled traffic with the Connecticut V.H.F. Net while in Winsted. WN2BLJ now is WA2BLJ, General Class. K2PTI has 34 states, with only a few easy ones to get, like Alaska and Hawaii. K2PIM passed the Extra Class exam. WA2AXC is trying to work DX on 6 meters. K2AGJ still is giving personal lessons at Kessler Inst. WA2APY received his 2nd-class commercial ticket and is looking for a ship. W2BVE is an NCS in MARS. W2CFB is on his mark for winter traffic. W2CVW, our new SEC, has 1st-class phone and 2nd-class telegraph licenses. W2CWK hopes to visit W8CBN and W8SG. W2EWZ now has a 20-meter coax-fed dipole. K2IZN went into the Air Force Aug. 17. K2MFF is working on an 813 rig and visited RM W2RXL. W2OPB lost his long wire when his neighbor cut down the tree it was on. K2QYI has car-itis. K2UKQ was elected to the TOPS C.W. Club. K2HKQ, a popular 6-meter man and member of the Amateur Radio Club of Harrison, passed away June 9. W2CGG, a staunch traffic man and member of NJN, passed away during the summer. Don't forget to send your self-addressed envelope to the North Jersey DX Assn. for your DX cards. Traffic: W2OPB 350, K2GIF 160, W2RXL 149, W2ZVW 92, WA2COO/2 84, K2YJH 79, K2UCY 66, WA2APY 54, W2RZO 50, W2BVE 47, K2MFF 36, K2ZMO 35, K2JTU 33, W2DRV 30, K2VVL 28, K2ZHK 27, W2EWZ 26, W2OXL 24, K2VAC 24, K2VNL 20, W2CVW 19, K2QYI 19, W2EBG 17, K2LWQ 14, W2REH 11, K2CBG 10, K2UKQ 8, K2VNK 8, W2CFB 6, K2SLG 6, K2AGJ 4, WA2CCF 3, K2TWZ 2, K2PBP 1.

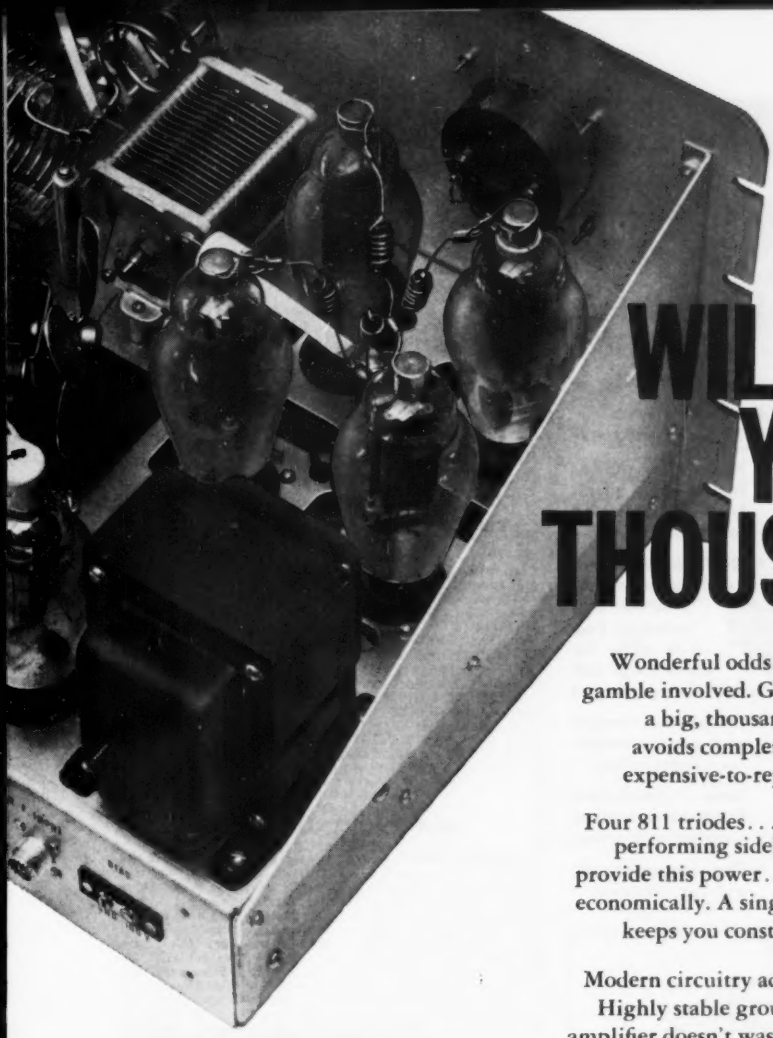
MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—The 75-Meter Phone Net Picnic held in Ames on Aug. 16 sponsored by the Ames Radio Club and the AREC, was attended by 350. The following Sun. 700 attended the Cedar Rapids Hamfest. A 32S-1 was won by CRG. Returning from a transmitter hunt near Hampton, KØDKA/mobile, with IJD and SOA as passengers, came upon a bad car accident. With the aid of CRG, in Iowa Falls, he notified authorities and an ambulance was promptly dispatched. Also the families of the injured persons were notified via amateur radio. Renewal of appointments: NWX and UIZ as ECs, YDV as OO. KØOVR has received his 25-w.p.m. Code Proficiency sticker. KØQAI has put up a three-element Triband beam. SLC now has an XYL in his shack. AWX, president of the Council Bluffs Club, is moving to California. VWF has been appointed State RACES Officer. TUS recently moved to Iowa from Minnesota. LCX vacationed in Colorado. BDR and NWX attended the ARRL Convention in St. Louis. Several other Iowa amateurs went also. MG is resigning as SEC. Thanks, Russ, for a fine job. SLC has been appointed as the new SEC. YNP has returned from summer school in Kentucky. Traffic: WØBDR 1588, LGG 1535, SCA 1294, LCX 1084, KØCLS 256, GXP 148, WØGXQ 148, KØIRW 112, CMC 76, WØBLJ 48, NGS 42, VWF 42, LJW 40, SLC 36, QVA 35, NTB 25, KØIHC 22, WØGQ 17, KØSEW 11, JGM 9, WØJPJ 8, KØKAQ 8, WØQVZ 6, REM 6, VQX 6, UTD 5, UTX 5, PTL 4, KØQAI 1.

KANSAS—SCM, Raymond E. Baker, WØFNS—SEC: IFR. Asst. SEC: LOW. RM: QGG. PAM: VZM. V.H.F. PAM: HAJ. JAS has picked up three new states on 2 meters. ETX now has 10 states worked on 2 meters. MOX has moved to Colorado and hopes to keep working Kansas on 2 meters. The Topeka Club has its Emergency Weather Net set up on 2 meters. Liberal has promise of one fixed and 6 mobiles on 6 meters for emergency work. OEF reports. ZUX reports operating the club station portable twice for handling traffic at the County Fair; also a set-up at the State Park for handling in-and-out traffic at the picnic. The Concordia Hamfest was held with a registration of 285. SEC IFR secured about 40 new members for the AREC. The Flint Hills Club has secured another site for its club station, a small farmhouse with antenna possibilities unlimited. KØBIX and LJH enjoyed a nice week's vacation in Wyoming. KØJVX will not be active on the nets on school days. Traffic: (Aug.) WØBLI 493, KØJVX 216, WØQGG 212, FNS 183, KØKMZ 130, WØTOL 105, ABJ 104, KØBIX 94, WØSYZ 63, VZM 57, IFR 49, UTO 30, KØBXF 26, MMF 25, KED 22, IZM 21, WØORB 18, KØEFL 14, WØGJG 14, WFD 14, FDJ 12, FHT 10, STC 9, TTG 5, VUI 5, WIZ 5, LEA 4, KSY 2, KØQOB 1. (July) WØOHJ 692, BLI 354, KØBXF 12, WØWIZ 9, FDJ 3, KØLPE 1. (June) WØRJF 70, VUI 7, KØGEL 4.

MISSOURI—SCM, C. O. Gosch, WØBUL—Net reports: (July) MON (0700, 3580 kc. M-S) 27 sessions; QNI 52, QTC 20; NCS OUD 26, KØONK 1. (July) MON (1900 3580 kc. M-S) 27 sessions; QNI 174; QTC 310; NCS OUD 8; KØONK 6, RTW 5, KØOJC 3, KØKBD 2, KØQCQ 2. (July) SMN (1600, 3580 Su.) 4 sessions;

(Continued on page 112)



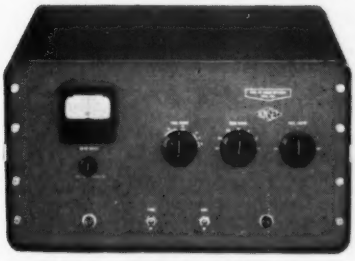
FOUR WILL GET YOU A THOUSAND!

Wonderful odds certainly. But no gamble involved. GSB-101 gives you a big, thousand watts P.E.P.— avoids completely, any need for expensive-to-replace large tubes.

Four 811 triodes . . . well-proved, top performing sideband veterans . . . provide this power . . . conservatively, economically. A single low-cost spare keeps you constantly in business.

Modern circuitry adds further value. Highly stable grounded-grid linear amplifier doesn't waste drive power in swamping, lets it appear as useful talk power in amplifier output circuit. (Drive requirement, 60-70 watts, ideally supplied by Gonset GSB-100.)

Operation on 80-40-20-15-10 meters . . . full bandswitching of course. Heavy-duty power supply with 2-866A's and bias supply built-in. Operating conveniences include, quiet, DC-operated antenna relay, indicator for constant check on output.



GSB-101 LINEAR AMPLIFIER.

Unquestionably, your biggest power-for-dollar value!

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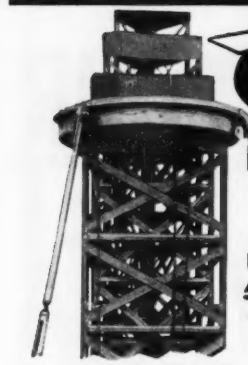

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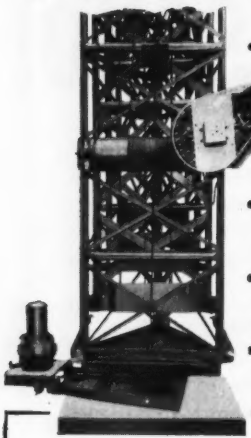
HZRN SERIES

Look At These *All New* Features!

- New roller guides for smooth, silent, frictionless raising and lowering.
- New rotating ring with large, sealed, precision ball bearings. You can rotate the entire tower with the tip of your finger!
- Increased strength and greater weight for utmost safety.
- New triple-coated finish for maximum weather protection.
- Plus many more new, exciting features!



NEW!

TOWER RAISING and LOWERING and ROTATING UNIT

Enjoy the convenience and ease of remote control. Here's everything you need to completely motorize your tower!

Write today for catalog describing and illustrating the most complete line of towers for amateurs and industry ...from low-cost economy models to the most deluxe.

TRI-EX TOWER CORP.

127 East Inyo Street, Tulare, Calif.

QNI 7, QTC 0; NCS OUD. (Aug.) MON (A.M.) 26 sessions; QNI 65; QTC 66; NCS OUD, KØONK, KØQCQ. MON (P.M.) 26 sessions; QNI 162; QTC 190; NCS ARO, KØKBD, KØONK, OUD, KØQCQ, RTW. SMN (Su. P.M.) 4 sessions; QNI 9; QTC 1; NCS OUD. (Aug.) MEN (1800, 3885 kc., MWF) 13 sessions; QNI 397; QTC 89; NCS OMM 5; OVV 4, OHC 1, VPQ 1, BUL 1, KØDXL 1. Officers of the St. Louis ARC, Inc., are EST, pres.; KØAEM, secy.: KØHUO, treas. The SCM, along with approximately 800 other amateurs, was privileged to attend the excellent ARRL Central-Midwest Division Convention at St. Louis on Aug. 23-24. A vote of thanks is due the entire committee for a job well done. When will the National Convention meet in St. Louis? Prizes were won by W9BJE, KØHBM, KØQTS, KNØSQG, TDL, VK3ACN (just visiting) and KØOLV. GEP reports that he handled 770 convention registrations personally. We regret to report the passing of JDB, the wife of UID, and extend our sincerest sympathy. The MARCC (Monett) reports the club station, HKJ, is 100 per cent sideband. Any others? The SCM was glad to be able to attend the annual picnic of the SWMARC (Springfield) where considerable interest was shown in ARRL appointments. Traffic: (Aug.) KØONK 1365, QCQ 519, KBD 207, WØOUD 107, MKJ 99, RTW 93, KIK 90, VPQ 57, KØOJC 40, WØOVV 33, KØHHA 25, WØBUL 18, KØDEQ 16, WØWFF 13, KØOEP 9, LGZ 8, WØBVL 2, KØIHY 1. (July) KØQCQ 190, WØRTW 91, ARO 53, KØDEW 4, JPJ 2.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—SXR is your substitute reporter while EXP and his XYL are on a vacation trip which includes attending the Convention at St. Louis and a visit with their daughter and family in New York State. KPA accompanied them to St. Louis to attend the Convention, returning by plane. The Morning Phone Net, DGW reporting, had QNI 624, QTC 144. He states there are now 40 on the roll. The Western Nebraska Net, NIK reporting, had QNI 597, QTC 73. ZOU reports most of his August activity was portable from Niobrara, Nebr., where he was working on a new home. Traffic: WØNYU 289, KØDGW 117, CBU 84, BDF 58, WØZJF 51, KØIJW 34, WØUOV 28, KØKUA 23, WØVZJ 20, KØRRL 16, HK1 14, MSS 14, WØVEA 12, KØCDG 11, BRS 10, WØZOU 10, EOQ 9, SPK 9, FBY 8, KØKJP 7, MZV 6, WØWKP 6, AFG 4, HOP 4, LFJ 4, QKR 4, AQQ 3, HTA 3, KØSLB 3, UWK 3, WØUJI 2, KØKJL 1. (July) WØVJF 16.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—OQC and K2DEM/1 made BPL. KN5SXF, now in Torrington, is on 2 meters. BFS added 9 new states plus 6 new countries. CHR reports Cheshire RACES is active again with six 2-meter Gonsets. YBH reports CPN handled 268 messages during 31 sessions in August. Daily attendance averaged 25 stations. High QNI were K1CRQ, FHP, 30; K1BEN, K1CBV, 26; K1AAE, 25. K1BTD is now in the Air Force. AMJ, ILV and K1EKO attended the ARRL New England Division Convention in Hartford. ILV took home an HC-10 s.s.b. converter. FHP motored through the South and West on vacation. KYQ advises that CN handled 316 messages, including 53 on the second session, during 31 sessions with an average daily attendance of 12.5 stations. High QNI goes to OBR and K1HWF. The CQ RC held its 6th Annual Picnic at Mohawk Mountain. GNS is monitoring 29.58 Mc. 24 hours a day with a BC-603. EOO was awarded a 6 and 2 and ECH a crystal marker at the Convention. K1HZT, a new member of the CN, is 14 years old. CHR's activity was slowed down during August because of the heat. K1BNQ expects school to curtail some of his operating. FHP reports that CVN handled 26 messages during 11 sessions with 92 stations checking in. High QNI goes to FHP, 10; KN1KGI, KN1KEA, HJG, 8. K1BJU is mobile on 2 meters with a homemade rig. FVV still is trying to eliminate the ignition noise from his 6-meter mobile. He also is active on 2 meters now. Father and son, K1HPA and KN1LEN, are active from Norwich using a DX-20. CKR is mobile on 2 meters with stacked halos. AXV and family mobiled throughout New England during their vacation. FVY still is trying to QSO Bermuda on 2 meters. ROX used OBR's ARC-5 mobile rig during his vacation in New Hampshire. K1ITW vacationed in Kansas. OBR has a mobile in his new Jeep. He received an EAN certificate. New appointments: SBK as EC for Manchester; K1HWF as ORS; K1CCB, K1EFI and EQV as OOs. Appointments renewed: GNS and MHF as ECs; K1AJJ as OO; YBH as OBS. Reports received: OES from FVV and LGE; OO from K1BNQ. Traffic: (Aug.) W1OQC 689, K1HWF 285, W1OBR 243, K2DEM/1 198, W1KYQ 114, YBH 93, AW 82, FHP 73, K1HZT 67, W1ROX 62, BDI 49, RFJ 47, VIY 37, K1CBV 30, W1CHR 22, JZA 21, TYQ 8, K1HOZ 7, W1BFS 4. (July) W1QJM 87, K1HOZ 7.

(Continued on page 114)

THE REVOLUTIONARY NEW CENTRAL ELECTRONICS 100V EXCITER-TRANSMITTER

BROADBANDED! ONLY ONE TUNING CONTROL, THE VFO ITSELF.

CENTRAL ELECTRONICS, THE PIONEER OF AMATEUR SSB IS PROUD TO BRING YOU THE FINAL RESULT OF THREE YEARS OF THE KIND OF PATIENT ENGINEERING, TESTING AND IMPROVING THAT MAKES FOR A SUPERIOR PIECE OF ELECTRONIC GEAR.

MANY OF THE TRIED AND TRUE PRINCIPLES AND FEATURES OF THE ORIGINAL MULTIPHASE EXCITERS HAVE BEEN RETAINED IN THE NEW 100V, ALTHOUGH IN VASTLY IMPROVED FORM. THE USE OF PATENTED BROADBAND CIRCUITRY THROUGHOUT PRACTICALLY ELIMINATES "COCK-PIT" TROUBLE.

REGARDLESS OF YOUR PREFERRED MODE OF OPERATION, IT'S ALL IN THE 100V. SSB, DSB, AM, PM, CW and FSK . . . AND ALL AT THE FLIP OF ONE SWITCH. ALTHOUGH THE 100V WILL PROBABLY FIND ITS GREATEST USE AS A SINGLE SIDEBAND SUPPRESSED CARRIER EXCITER-TRANSMITTER . . . NO ONE HAS BEEN "LEFT OUT IN THE COLD" IN ITS DESIGN. THIS IS THE KIND OF A RIG THAT HAMS DREAM ABOUT!

CHECK AND COMPARE THESE FEATURES

STABILITY: The new patented two tube permeability tuned VFO circuit is exceedingly stable and is immune to the effects of line voltage fluctuations and tube ageing. Built like a battle ship, it is tuned by a husky precision lead screw assembly running in ball bearings. This is a VFO to end all VFO's.

FREQUENCY COVERAGE: 80 METERS — 3.5 to 4.5 Mc. 40 METERS — 6.5 to 7.5 Mc. 20 METERS — 13.5 to 14.5 Mc. 15 METERS — 20.5 to 21.5 Mc. 10 METERS — 27.7 to 29.7 Mc. A spare X position provides for the installation of broad-band coils for 160 meters, MARS, etc. OR any 1 Mc. portion of the spectrum between 1.5 Mc. and 25.5 Mc. OR any 2 Mc. portion of the spectrum between 25.5 Mc. and 29.7 Mc. YOU DON'T SETTLE FOR HALF A LOAF OF FREQUENCY COVERAGE WHEN YOU HAVE A 100V!

THE TUNING DIAL: Band scales in the large slide rule window change with the band switch and are calibrated at each 100 KC point. Frequency is read directly in 1 KC increments by the circular KC dial without any computation whatever. Approx. 12 feet of bandspread on each band. A smooth running two-speed tuning knob allows fast tuning at 100 KC per turn and slow tuning at 750 CYCLES per turn. Calibration accuracy is 250 cycles between any two 50 KC points.

METERING: Reads POWER INPUT (0-200 watts) RF AMPS OUTPUT, AC LINE VOLTAGE and CARRIER SUPPRESSION IN DB DOWN TO 70 DB.

MONITORING: A 2" scope provides an instantaneous visual check on non-linearity resulting from improper loading. Also indicates proper setting of carrier injection for 100% AM modulation. Scope presents trapezoid pattern.

OTHER INDICATORS: Below the meter a neon indicator provides a check on the operation of the NEW AUDIO LIMITER CIRCUIT. Below the scope a second neon indicator starts operating if you have the antenna or load mis-matched.

NEW AUDIO FILTER-LIMITER: The new filter is composed entirely of R-C components, yet has the steep side response and rejection characteristics of a four toroid tuned filter but without the usual harsh, ringing effects. Bandpass is 200 to 3700 cycles. This filter precedes the phase shift system and will maintain 50 DB SUPPRESSION OF THE UNWANTED SIDEBAND. The new audio limiter maintains audio drive to the balanced modulator WITHIN 1 DB, REGARDLESS OF HOW HARD THE MIKE IS HIT. IT'S IMPOSSIBLE TO OVERDRIVE THE 100V BALANCED MODULATOR! Inverse feedback circuits allow 10 DB OF CLIPPING with negligible distortion.

NEW PS-2 AUDIO PHASE SHIFT NETWORK: A twelve cross-over point network is composed of heat-cycled components having .1% accuracy. Even changing the balanced modulator tubes has no effect on its maintaining 50 DB OR BETTER suppression!

POWER OUTPUT: The husky, ultra-linear type 6550 tubes in the final of the 100V will deliver 100 WATTS OF SINGLE TONE POWER, EVEN ON TEN METERS! AND WITHOUT GRID CURRENT FLOW. Two tone third order distortion products are down in excess of 40 DB. A new POWER OUTPUT CONTROL eliminates the need for power dividers when driving AB1 or AB2 linears, since power output is continuously variable from 10 watts to full output.

SET AND FORGET CONTROLS: These seldom used controls are all located behind the flip down magnetic doors on the front.

GENERAL CIRCUITRY: Crystal controlled master SSB generation is at 8 MC. VFO injection is 5 to 6 MC. Crystal controlled heterodyne oscillators operate into mixer stages for various bands. This system, originally developed by C. E. is today the standard of the industry. Blocked grid keying of mixers and final amplifier provides perfect CW and PHONE BREAK-IN.

PHYSICAL DATA: Panel is standard 19" width by 8¾" high. Finish is smooth grey. Attractive heavy duty rounded corner cabinet is 15" deep, is finished in grey wrinkle and has a latch type access lid. Shipping weight approx. 90 lbs.

MULTIPHASE 100V complete.....Amateur net **$695.00**

Orders entered prior to June 1, 1959 will be shipped at the original price of $595.00

COMING UP! MORE SUPERIOR GEAR FROM C. E. THE SSB PIONEER

A NEW COMPANION RECEIVER: Which will TRANSCEIVE THE 100V or separate the two VFO's at the flip of a switch. The 100V has the interlock control sockets built in.

A NEW 2500L BROADBAND LINEAR AMPLIFIER. Big brother to the famous 600L.

A NEW HETERODYNE CONVERTER: To cover all of the 2 and 6 meter bands with the 100V. Interlock control sockets are in the 100V.

SORRY: INFORMATION AND DELIVERY DATES ON THESE NEW ITEMS NOT YET AVAILABLE.

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

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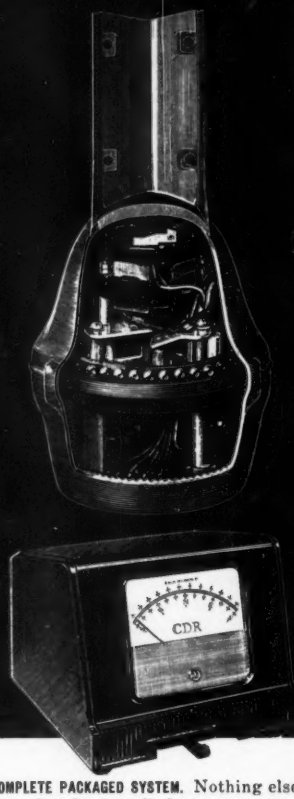
A subsidiary of Zenith Radio Corp.

WRITE FOR LITERATURE ON THE COMPLETE MULTIPHASE LINE

CDR

"HAM-M" ROTOR

install in any type of tower



COMPLETE PACKAGED SYSTEM. Nothing else to buy. Can be installed atop *any* tower, and inside most towers. North-Center meter scale kit. Base plate for internal tower mounts. Anti-meter flutter kit. Mounts in 30 minutes.

EXTREMELY RUGGED. Extra heavy-duty. Thousands now in use, rotating every conceivable antenna combination. Windproof, ice-proof, moisture-proof! Won't drift! Provides 3500 in.-lbs. resistance to lateral thrust! Will replace any existing rotor installation. Gives superior performance. At your distributor. Only **$119.50.**

CDR HAM ROTOR

Cornell-Dubilier Electric Corp., South Plainfield, N. J.
The Radiart Corporation, Indianapolis, Ind.

MAINE—SCM, Jeffrey I. Weinstein, W1JMN—SEC: JMN, RM; EFR. Traffic nets: The Sea Gull Net meets on 3940 kc. Mon.-Sat. at 1730; the Pine Tree Net meets on 3596 kc. Mon.-Fri. at 1900. New appointments: K1DPM as OO; K1BQT, DFM, GVQ and GPY as OPSs. Endorsements: EFR as RM; FV, GPY and LWO as ORSs; AI, BX, FNI, FV, GKJ, LWO, MXT, ThE and K1ADY as OPSs; MXT as OBS; LWO and KEZ as ECs. Your SCM had the pleasure of attending the 1959 ARRL New England Division Convention in Hartford, Conn., Sept. 5 and 6. Anyone desiring a full written report of the convention happenings may receive a copy upon request. About 75 attended the Bangor Hamfest. K1DVN and BUZ won first and second prizes, respectively, in the transmitter hunt. EBJ is on 75-meter f.m. K1ADY has WAC and CP 20-w.p.m. K1BAY has a second jr. operator, KN1LYY. K1LSJ has a new SX-101. K1HHX is now on with a Viking Challenger. I would appreciate hearing from anyone interested in initiating a slow-speed c.w. training net for Novices and beginning Generals. The PAWA meets every Tue. evening in the C.D. room of Portland City Hall. JMN sends Official Bulletins and general information Mon.-Fri. on 3596 kc. at 2000. Anyone who has an activity or something of interest coming up in his area and wants it known over the air should send the information to JMN, 79 Caleb St., Portland, Maine. Your SCM is acting as SEC until a qualified candidate can be found. Anyone interested? Traffic: W1QJA 126, GPY 109, K1DPM 54, W1ISO 47, EFR 29, BX 10, OTQ 10, TKE 8, K1GVQ 7.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—AOG has been appointed Section Emergency Coordinator and wants to work with all Radio Officers and ECs in this section. Give him your support. PAMs: UIR for 2, THO for 6, DFS for 75 meters. RMs: UE for 80-meter c.w., AQE for 40-meter c.w., SAD for 20-meter c.w. New appointments: AWA as OPS and K1KCG as OES. Our traffic nets: Eastern Mass. C.W., 3660 kc., Mon. through Fri. at 1900; Eastern Mass. 2-Meter, 145.8 Mc., Mon. through Fri. at 2000; Mass. Phone, 3870 kc., daily at 1800; 6-Meter Crossband, 50.85 Mc., Mon. through Fri. at 1930, Sun. at 1000; TCPN, 3970 kc., daily at 1700. You are welcome to check in. Mass. Phone Net certificates have been issued to PEX, CZW, SS and K1ADH. If you live in any of these counties you are in the Eastern Mass. Section: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth and Suffolk. All others are in the Western Mass. Section. Appointments endorsed: IHC and JSM as OESs; TWG as OBS; TWG, K1CFT, DJG and DEY as OOs; EAE as ORS; JSM Waltham, 1SU Holbrook and MB Scituate as ECs. K1INZ and 1N/1 are on 75 meters. BNS is on 75 meters when home but is doing a lot of traveling around the country. K1AMP has a new daughter. KN1LEP has a DX-40 and an SX-100. KN1LJK has a DX20-SW4. KN1JJE and LLU are on 2 meters. We all wish FI the best of luck on his retirement at his new QTH, Pigeon Hill, Millbridge, Me. K1BGX is a new OES. The Braintree Club held a meeting. LMZ is going to college. New on 2 meters: KN1KMN, LWG, K1BUF, EHF, DFS and LKQ/1. K1GGW has a Heath transistor radio. K1GQZ now is in Medford. K1GYM's son passed the Tech. Class exam. 2VZG/1 has a double halo up five stories in Boston. JSM has a 4X250 final coaxial type on 2 meters. TWG is fishing in New Hampshire. K1DIO went to Northern New York on a trip. MIX got the No. 1 Worked Rhode Island certificate. NKA has an LW-51 on 6 meters and an SX-71. KN1KEC, Concord, is on 2 meters. LMZ and K1BRO are going to Wentworth Inst. K1BYV's rig broke down. IEF is going to Rensselaer Polytech. IHC is on 3500 Mc. Klystron. SMO and IRH used one of WBOS's towers for a 350-ft. vertical on 160-80 meters. K2KIR is operating as Alt. NCS on EAN. JNV was top OO for 1958. K1EJW is on 6 meters. K1AII has a 6N2 and a v.f.o. BB is testing Communicators in a sailboat. KN1KYN, KPD and LWJ are new in Winthrop. LMZ worked 3LML on 2-meters and 3LZO. DXE/1, on Hogback Mt., Vt. is on 2 meters. Anyone interested in handling intercity chess match traffic should write to 9SM. The T-9 Radio Club met at MNK's QTH. K1BVD has a new Apache. LAX is building a new transmitter. HIL is on 40-meter phone. BW and K1CBB are working on mobile. K1BUR has a Valiant. K1BBU is getting ready for a hunting trip. BIY will be on the air soon. SS is manager of the Satellite Data Link Net on 3820 kc. Mon. and Thurs. DVS, Falmouth, has been endorsed as EC and HWE as ORS. New officers of the Bedford Radio Club are SS, pres.; LMZ, vice-pres.; EIQ, treas.; NDI, secy. K1AII is on 2 meters. AWA operated portable from Quincy on the 6-Meter Cross-Band Net and made BPL. ALP went to the convention in Hartford. KYL is home from New Mexico and has joined MARS. ZIOU/1 is living with K1IZB and IYX. Traffic: (Aug.) W1AWA 727, K1GRP 564, W1NJL 513, PEX 229, EMG 116, K1DGI 103, DIO 101, W1EAE 95, IEF 91, K1BYL

(Continued on page 116)

NEW!

GENERAL–COVERAGE AT ITS SSB BEST!

NEW HAMMARLUND HQ-180

★ **18-tube, triple-conversion, superheterodyne with automatic noise limiter.**

★ **540 KCS to 30.0 MCS with bandspread on 80, 40, 20, 15 and 10 meter amateur bands.**

★ **Razor-sharp slot filter with up to 60db attenuation. Separate linear detector. Selectable Sideband. Controlled BFO. Selectable AVC. Built-in 100 KCS calibrator.**

They said it couldn't be done — **professional-quality performance SSB in a general-coverage receiver** at a **price less than ordinary SSB general-coverage receivers.** Hammarlund did it! The all-new Hammarlund HQ-180 goes far beyond any previous concept in value and performance. See it and try it right now at your Hammarlund dealer . . .

$429.00

*Telechron clock timer optional, $10 extra.

WRITE FOR COMPLETE SPECIFICATIONS . . .

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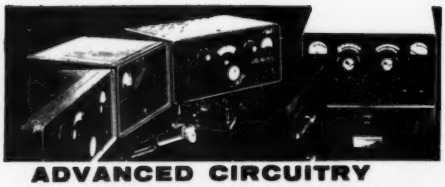

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SIMPLIFIED OPERATION
COMPACT STYLING
TOP PERFORMANCE

YOURS WITH
COLLINS S/LINE
AVAILABLE NOW FROM
DeMambro

32S-1
TRANSMITTER

- Nominal output 100 watts (P.E.P.)
- Covers 80, 40, 20, 15 & 10 meter bands
- Mechanical filter sideband generation
- Crystal controlled high frequency oscillator

$590

75S-1
RECEIVER

- Provides SSB, CW & AM reception on all bands between 3.5 & 29.7 mc.
- Dual conversion with crystal controlled first beating oscillator
- Stable, permeability-tuned VFO

$495

312B-3
SPEAKER
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312B-4
SPEAKER CONSOLE
$185

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All with TELETYPE CONNECTION to MAIN STORE
BETTER STILL, COME IN — PLENTY OF PARKING SPACE

68, KØMMZ/1 65, W1UIR 63, K1GYM 48, W1SS 44, S1V 36, OFK 33, ZSS 29, K1CMS 14, W1GEK 14, UE 12, TY 10, ATX 8, IBE 7, WAJ 7, K1AII 6, BUF 6, W1DTB 6, K1IKX 6, W1LMZ 4, WU 4, BB 3, HWE 3, MIX 1, TWG 1. (July) W1WAJ 18, K1AII 6, EJW 5, W1SMO 1.

WESTERN MASSACHUSETTS—SCM, Percy C. Noble, W1BVR—SEC: BYH. RM: DVW. PAM: DXS. V.H.F. PAM: RFU. The WMN meets on 3560 kc. at 1900 Mon. through Sat.; MPN on 3870 kc. at 1800 daily. We could use more stations on both of these nets. New appointments: DVW as RM, DXS as PAM (MNG requested cancellation because of other duties), LRA as EC for Westfield. EOB has been endorsed as ORS and reports DXCC 225 now confirmed. The Berkshire County Amateur Radio Assn. gets out a nice monthly bulletin. ZPB has a new antenna and plans for many refinements. K1IJV is doing a swell job on WMN. Plans are underway for v.h.f. tie-ins with the Mass. Phone Net from this section. AGM was heard on WMN (c.w.)! Many of the gang attended the very excellent ARRL New England Division Convention at Hartford. K2YTD/1 made BPL operating at Lenox. We regret to report the death on Sept. 8 of our very able EC of Amherst, TAY. NMQ reports that the Quinebaug Valley Radio Club Traffic Net has been operating all summer on 50.250 Mc. Wed. at 1930 and Sun. at 1100. The Mass. Phone Net has been approved as official net of the National Traffic System. Congrats to former SCM, DGL, and former PAM, MNG, for jobs well done! As your new SCM perhaps I should tell you that I've had previous experience on this job—1934 to 1936. There's a bit more to it now, though! Monthly activity reports are required from all OOs, ORSs, OPSs, OBSs and OESs, and are invited from all active West. Mass. stations. These should reach your SCM by the 5th of each month. EC reports should be mailed to your SEC by the 3rd. Your call won't be in this column unless we hear from you, and neither you nor I would like that! Traffic: K2YTD/1 131, W1BVR 108, ZPB 31, AGM 24, DZV 23, DXS 20, EOB 20, DVW 17.

NEW HAMPSHIRE—SCM, Robert H. Wright, W1RMH—SEC: BXU. RMs: K1BCS and K1CIF. PAM: HQ. V.H.F. PAM: TA. The following are the active New Hampshire nets: Granite State Phone Net on 3842 kc. Mon.-Sat. at 1900 and Sun. at 0900; the NHN (c.w.) Net on 3685 kc. daily at 1830; the Northeast V.H.F. Net on 145.8 Mc. daily at 1930. MDP is a new Class I OO The Manchester Radio Club recently held a raffle to raise money for club activities. K1DPT is back home after two months in the hospital. K1CIG has a new 6-meter beam and an eleven-element beam on 2 meters. Also on 6 meters in the Manchester Area are K1JYH and ELH. BYS mobiled to the Grand Canyon and the West Coast during September. K1CIF is living in Fall River, Mass., and operating portable during the school year. Renewals: K1CIF as ORS; K1BCS as RM. Anyone interested in the SEC appointment for the State, please contact me. Traffic: (Aug.) K1BCS 783, CIF 580, IIK 183, W1QGU 47, AIJ 15, BYS 3. (June) K1BOO 6.

VERMONT—SCM, Harry A. Preston, jr., W1VSA—SEC: EIB: RM: K1BGC. PAM: K1GLO. Asst. PAM: HRG. Vermont frequencies: C.w. 3520, phone 3855, RTTY 3620. Nets: C.w., M-W-F 1830; VTPN, Sun 0900; GMN, Mon.-Sat. 1700; VEPN, Sun 1700. K1HMQ, who recently dropped the "N," won the Novice Roundup for Vermont. K1IXB is the new EC for Orleans County. Send in your AREC forms to him if you live within his area. K1BOL recently rebuilt his antenna tuner and is now on 20 meters. EXZ has extended ground wave on 50 Mc. to Maine with a mile span of 115. The BARC, Inc., has elected five new trustees and a clerk. WPY is pres.; WPJ, treas.; EOY, HUR and K1AUE are the newly-elected team. KN1KSS is the clerk. The Middlebury Mike and Key Club held a mobile treasure hunt on 2 meters. WEW is on from Shelburne with four stacked Halos on 2 meters and RTTY on both 80, 40 and 2 meters. New equipment: OJU and K1CPC have new Viking Valiants. KN1JYP has a Gonset II on 2 meters. These three stations are all brothers in the Burlington Area. New stations on RTTY in Vermont: TBG, K1HCZ, EOY, LMI and WEW. Traffic: W1VSA 63, K1GBF 60, HKI 41, W1ELJ 22, KJG 11, K1BOL 2.

NORTHWESTERN DIVISION

IDAHO—SCM, Mrs. Helen M. Maillet, W7GGV—The West Yellowstone earthquake gave Idaho RACES a chance to put its good training into use by handling emergency messages into and out of the area when all other means of communication failed. They are commended for a job well done! DWE replaces GRU as NCS for C.D. District 6. Fremont County has a c.d. ham station in the Court House. The Shoshone County ARC held a car wash to raise money for club gear. Boise hams and families picnicked at HOV's place on the Dam. The Valley Club picnicked and transmitter-

(Continued on page 118)

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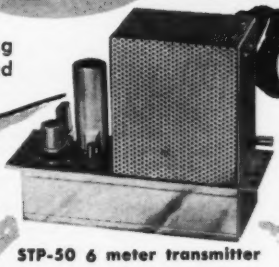

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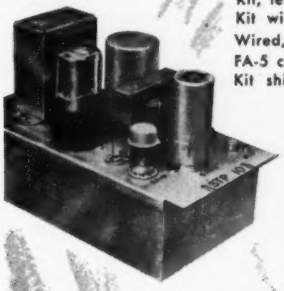

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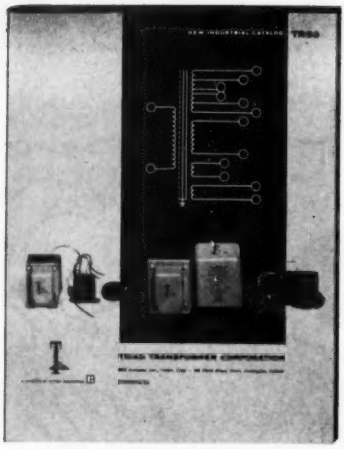

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hunted at Rexberg with WEY and GGV as winners. DWE had a watermelon bust for the boys who helped take down his vertical. He's replacing with a Triband beam. DUP was home for two weeks between colleges. K7IMB has a new son. JAU moved to Billings, ACD and BKJ to Cottonwood, Ariz., and IBC to Ellensburg. ORB visited GGV and K7CXP's shack. Traffic: W7GMC 118, K7BWV 36, GHX 34, W7GGV 9, VQC 8, DHL 2.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH. PAM: EOI. RM: KGJ. MPN meets M-W-F at 1800 on 3910 kc. MSS meets T-T-S at 1900 on 3530 kc. A severe earthquake shook Montana on Aug. 17. Montana amateurs supplied communications throughout the devastated areas. The WIMU Hamfest had an all-time-high attendance record. YZQ won the Mobile Field-Strength Contest and the Commercial Mobile prize. NPV won the Home-Built Mobile prize. Ham picnics were held at Havre, King's Hill and Missoula. Lewistown amateurs supplied communications for the dedication of the new Missouri River Bridge. MVN has a new baby girl. K7BKH and K7BYC made BPL. K7DAD is a new Conditional Class licensee at Ryegate. JAU moved from Lewisville, Idaho, to Billings. K5OBD moved from Tulsa, Okla., to Billings. KØIQJ moved from Bismark, No. Dak., to Billings. Traffic: K7BYC 339, BKH 215, W7YHS 149, K7EWZ 75, DVZ 34, GHC 32, W7NPV 11, K7IHA 2, W7YQZ 1.

OREGON—SCM, Hubert R. McNally, W7JDX—Interesting v.h.f. reports came from K7DVK, K7AIS, K7GFY, K7IML, GAU and UYT. Would like to have more reports from other OESs on their v.h.f. activity. DEM is training disk jockeys in c.w., etc., and now has a graduate. JBP, K7ETL has moved to Boise, Idaho, where he will continue OES activities. DIC is keeping busy. VIL, EC Jackson County, sends a nice report. K7CNZ is working on 2-meter gear after a nice vacation. LT is busy with his 58-ft. crank-up tower and Tribander. Old reliables ZB and BDU made BPL again but K7CLL slipped a little. His XYL, Diana, is now KN7IWU. Perhaps that is what's holding Ken back. SNA is moving from The Dalles and BZC has taken over as EC for Wasco County. K7GSR is rebuilding to work continuously on 148 Mc. BZC has a nice report on the activity of hams at the dedication of the Dalles Dam. The OARS had a nice picnic at Plox Point on Aug. 30. OSN still is going along great and AJN and ESJ have plans for the future which will arrange liaison between local MARS and OSN. JDX was on vacation trying to catch a salmon in the Columbia River. The new AREC Net on 3875 kc. continues to show progress. Any AREC member can check in Mon. through Fri. at 7 P.M. Traffic: (Aug.) W7ZB 547, BDU 531, K7CLL 362, W7ZFH 80, MW 51, AJN 50, LT 42, K7CNZ 37, W7SNA 24, VIL 22, DIC 18, K7ETL 15, W7DEM 14, OMO 13, JDX 7, K7DVK 2. (July) K7CLL 321, W7AJN 41, SNA 26, RCL 6, EZH 4.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—SEC: PQT. RM: AIB. PAMs: LFA and PGY. Washington nets; CBN, 3960 kc., 2000 PST; NSN, 3700 kc., 2100 PST Mon. through Sat.; WARTS, 3970 kc., 1830 Mon. through Sat.; WSN, 3535 kc., 1900 PST Mon. through Fri. JEY is back on WSN after summer school in Colorado. The Pierce County RACES Net resumed full operation Sept. 13. DPW has a new Hornet TB-500 Tribander up. The WARTS Net had 1485 QNIs and 155 QTCs in August. IGF reports summer activity was at a new low but the Medical business sure was hopping. AMC took a hunting trip east of the mountains. CZY spent his vacation in Mt. Rainier hiking and photographing. IEU has a new Valiant working with good results. IKG also has a new Valiant. K7ATF is a new General Class licensee in the Tacoma Area. K7ATD vacationed in Yellowstone National Park. RGD won the pinocle cup for the year. PFZ is sporting a new Corvette. RGL transmits Official Bulletins on 3700 kc. at 1830 Mon., Wed. and Fri. GIP is looking for an instruction manual on the RAL-7. JC is having trouble with his v.f.o. ZIZ has a new linear. ITP is the new EC for Columbia County. K7BEO is the new EC for the Spokane Area. QLH renewed his ORS appointment. PGY renewed his PAM and OO appointments. All ECs are urged to get their reports in to the SEC by the second of each month. EKQ renewed his OPS appointment. The WARTS Net changed its net time to 1800 PST Mon. through Sat. beginning Sept. 7. The Northwest Chapter of the QCWA held its annual dinner meeting at the Holiday Hotel, Yakima, June 13 with 69 attending. HF has been appointed historian of the Northwest Chapter to carry on the duties of the late OHW. There now are 219 members in the Northwest Chapter. Traffic: (Aug.) W7BA 1611, DPW 503, DZX 441, QLH 286, ZIZ 197, ETP 194, HUT 157, APS 141, KZ 90, IEU 79, OEB 79, AMC 63, AIB 62, BJR 40, GIP 35, K7AJT 31, DDQ 12, W7REC 12, K7GNA 8, W7CZY 4. (July) W7OEB 164, GIP 81, USO 26.

(Continued on page 120)

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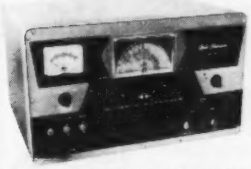

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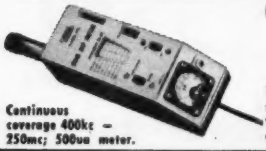

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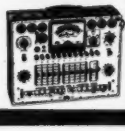

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PACIFIC DIVISION

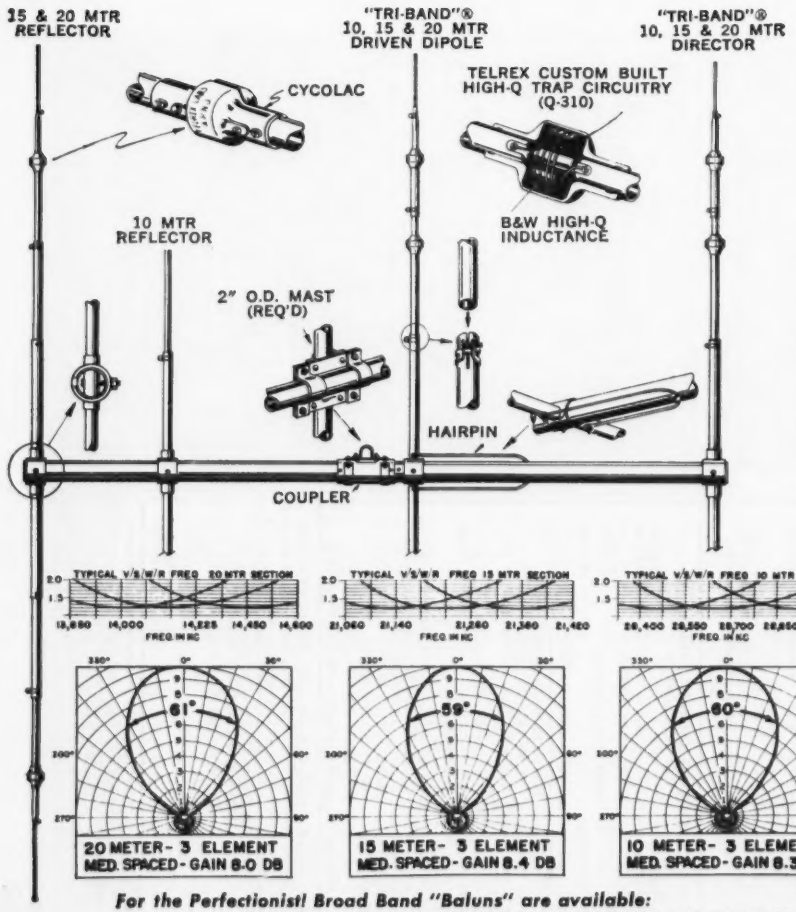
HAWAII—SCM, Samuel H. Lewbel, KH6AED—The Division Convention came off on schedule with an attendance of 348. JEM went home with a GSB-100 S.S.B. transmitter. Sixty-seven KH6s went through the Wouff-Hong Initiation. W6GGC and his XYL attended and gave away one of his famous "Golden Garbage Cans." Officers of the Okinawa Amateur Radio Club, an ARRL affiliate, are KR6QM, pres.; CN, vice-pres.; GE, secy.; DZ, treas.; JR, QSL Mgr.; GC, activities mgr. Hurricane Dot stirred up the Island of Kauai and the RACES gang there kept the Civil Defense Hq. in touch with isolated communities for thirty-six hours. Those doing a tremendously important job were LG, SN, ASX, AZG, BIB, CNC, CNP, COD, COL, CQB, CQD, CQF, CRP, CQG, CTM, DBB, OEL and CQJ. DE, who was on Kauai at the time, gave invaluable assistance.

NEVADA—SCM, Charles A. Rhines, W7VIU—The NARA held a special meeting Aug. 18 with very fine attendance to hear interesting talks by Director Engwicht and National Emergency Coordinator Hart. The NARA held a picnic at Donner Lake on Aug. 30. CNG was a visitor. THH and family attended the NARA Field Day at Lahontan. MAH is back from National Guard camp in Idaho. JDI received Nevada Achievement Award No. 68 from the SNARC. CZZ and PC furnished 2-meter communications for the Sky Divers at Carson City. This kind of activity results in good publicity for ham radio. CX has new beams for 6 and 2 meters. VIU attended the NARA meeting Aug. 18; he is the first W7 to receive the Award Hunters' Club certificate. K7CWV is doing fine traffic work on TCC, RN6, PAN and NVN. HYL and ILB are new Reno calls. ILB is ex-K2YEB. 1EOX/7 is on from Sparks. BYR is hunting in KL7-Land. Traffic: K7CWV 149, W7VIU 117, K6EE/7 13.

SANTA CLARA VALLEY—SCM, W. Conley Smith, K6DYX—At 1445 on Aug. 24 a Mr. Weaver called the Red Cross in Menlo Park. He was extremely anxious as to the welfare of his son located on Midway. Telephone service was not available and cable had not brought the results he wished. Through the trustee of the amateur station located at the Red Cross, contact was made with K6ZKH, in Atherton. Marge works s.s.b. She was given Mr. Weaver's phone number and managed to hook up with KM6BI on Midway. Mr. Weaver was able to talk with his son at length. At 1645, just two hours after the original call, the Red Cross was informed that the contact had been completed. Chalk up one for the AREC. Using the equipment of K6TEH, the Monterey Bay RC station, W6UCS/6 operated for five days at the County Fair. K6VQK and WA6BZE were in general charge. Many enjoyable QSOs were made by the club members operating in shifts and the ins and outs of amateur radio were explained to many visitors. The Northern Calif. Traffic Assn. enjoyed a dinner meeting and ragchew with W1NJM, the NEC, in Palo Alto on Aug. 19. K6EWY is all set to run high-speed code practice schedules in conjunction with W1NJM and W1TX. W6ZRJ operated portable during his vacation trip in Oregon. W6YHM put his ham know-how to use during his recent business trip to KL7-Land. W6DEF says he spent his vacation "eye-balling" with AREC members. W6PLG is building an audio system for the family. K6YKG has a real home-brew break-in system. He even made his own relay. W6CBX is going strong on 2-meter RTTY. K6GZ wants RTTY traffic skeds with eastern stations. W6OWP has joined AF MARS RTTY. W6WNI has left the section and probably will be heard as W5JTC from Texas. Traffic: (Aug.) W6RSY 1139, K6GZ 632, W6AIT 223, K6DYX 210, K6GID 180, W6YBV 112, W6UCS/6 102, W6JCG 74, W6YHM 61, W6FON 54, K6YKG 34, K6VQK 25, W6DEF 18, K6TEH 17, W6ZRJ 10, W6PLG 6. (July) W6PLG 71, W6FON 66, K6HGV 42, W6JCG 9, K6YKG 6.

EAST BAY—SCM, B. W. Southwell, W6OJW—SEC: K6DQM. ECs: W6LGW, W6ZZF, K6EDN, K6JNW and K6ESZ. The address of the new ARRL QSL Bureau for W6-K6 is Box 16006, San Diego 16, Calif. W6CBF is QRL flying. K6JIT is building equipment for 2 meters. K6OKK and W6OKR are working on 2300-Mc. gear. The CCRC held its August meeting at the QTH of W6LGW. WV6GUM is a new Novice in the HARC. K6JZN and his XYL spent their vacation in W7-Land. WV6FFQ, K6UGV, WA6CJU, K6QFT, K6UID and WA6CSK operated from Mt. Diablo in the Field Day test. W6UGO is a new member of the HARC. W6ELW was guest speaker at the SFRC. The MARS station at Treasure Island is in need of amateurs to handle communications for them. If interested, contact K6NCG, MARS, Treasure Island, Calif., giving the type rig you have, frequencies and which nights you may be available. K6ZYZ made BPL. Congrats. K6GK is rebuilding.

(Continued on page 122)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Boom length and diameter	16 ft. x 2" O.D.
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That's all this month, gang. Keepp the reports coming. Remember, this is your column. Traffic: K6ZYZ 511, K6GK 94.

SAN FRANCISCO—SCM, Leonard R. Geraldi, K6ANP—Asst. SCM: Jeri Bey, W6QMO. PAM: W6WJF. RM: K6PQG. The San Francisco Radio Club had its annual picnic at Orange Park in South San Francisco with the usual fun for all. ZL3CC, a guest at the picnic, won a volt ohmmeter. K6ANP acted as host to ZL3CC during his stay in San Francisco. The 4th Air Force MARS had its Annual Fall Hamfest for Northern California Sept. 6 at El Verano. WA6HMN is the new official radio station at St. Lukes Hospital in San Francisco. Operating on 6 meters, it was created to be used in case of disaster. Congratulations to K6JHL for his fine work in setting up this project. W6FEA is the new president of ALN. Congrats, Gertie. W6GGC reports that he and his XYL, Rose, had a wonderful time at the convention in Hawaii. Wally brought home a pair of 4X250Bs. W6GQA has mailed over 700 cards for off-frequency operation since his appointment as OO in 1954. K6ANP, W6QMO and K6HYW attended a dinner on Aug. 19 of the NCTA (North California Traffic Assn.) in honor of W1NJM. Best wishes to K6LRN on his recent marriage. W6SPC is now checking into NCN. The San Francisco Radio Club enjoyed a very informative talk at its August meeting by Jack Wilson, a u.h.f. design engineer for Western Development Lab. BAYLARC is busily completing plans for its Halloween Party in Sigmund Stern Grove. The YLs plan an international buffet and costumes for the guests. Applications for all appointments are now open. If interested, your SCM will be happy to hear from you. Traffic: W6FEA 35, W6GGC 8.

SACRAMENTO VALLEY—SCM, Jon J. O'Brien, W6GDO—Asst. SCM: Willie van de Kamp, W6CKV. SEC: K6IKV. RM: W6CMA. PAMs: W6ESZ and W6PIV. Six cars turned out for the first 2-meter "rabbit" hunt to be held in the Sacramento Area in a long time. W6GDO and K6HHD hid the "rabbit." The first car in was K6BNB, with K6ENK and K6PBG helping. K6QIF tied with K6LEO and W6KFL for a three-way second place, followed by W6PIV and K6PWA. Plans are to have hunts regularly once or twice a month. Everyone is invited. The time and date will be announced each Tue. at 1930 on 147.12 Mc., the Sacramento Emergency Net, or contact K6QIF, W6GDO or K6HHD for information. W6GGW and K6PWH have a new 2-meter beam up. K6OND is active on 2 meters and was heard mountain-topping with W6QNI during the recent V.H.F. Contest. W6PIV has gear going on 220 and 432 Mc. and just needs someone to talk to! K6SXX has a new Valiant and an SX-101; he also reports that he and many hams were active in forest fire communications during Aug. 14-19 and provided 140 hours on 75 meters without loss of communication. W6WLI is doing a commendable job as OO; he also worked his 125th country. K6EIL has completed WAC. Many appointments still are open. If you are not sure of qualifications, send a card or message to W6GDO for a copy of *Operating an Amateur Radio Station*, which explains the appointments. Traffic: (Aug.) W6CMA 228, K6SXX 48, W6QNI 32. (July) W6CMA 84.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—WA6BAI is the new call of the Tulare County Amateur Radio Club. W6ARE is looking for contacts on 50.58 Mc. K6ZDD is on 6 meters. W6EUH sold his DX-100 and is looking for a Valiant. K6RLX bought an HRO receiver and is on 10 and 20 meters. K6CPQ is getting back on his feet after an injury. W6PXP had his gall bladder removed. Everyone wishes Joe a quick recovery. W6KTW is building a new QTH near W6JPU. W6UBK bought a Geloso v.f.o. and the first contact on 20 meters was an Italian station! W6QFR is installing an s.s.b. station on his new yacht for all bands. K6GTI is gathering parts for an s.s.b. mechanical filter exciter. W6NKZ is chasing some bugs out of his s.s.b. exciter. K6ZCD is having mechanical difficulty with his HT-32. K6OGX is chasing DX on 6 meters from all hilltops near the valley. The Fresno gang still holds 75- and 6-meter transmitter hunts every Monday after the c.d. check-in at 8 P.M. K6KYW was a recent visitor to Fresno from Los Angeles. W6LOS, who is an expert by now on Panadapters, seems to have his Panadapter problem licked. The San Joaquin Valley Net in August chalked up the following record: 21 sessions, 391 check-ins, 120 traffic count. Frequency is 3940 kc. and all hams in the San Joaquin Valley are invited. K6YZP spent his vacation in San Francisco. K6QPE now has a 75A-3 receiver and is s.s.b.-minded. W6FEJ is back from Air National Guard and is on 2 meters. Please send in your reports. Traffic: K6EJT 18, W6USV 17, K6ROU 3, K6RLX 1.

(Continued on page 124)

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ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL. PAM: DRC. V.H.F. PAM: ACY. RM: PNM: Lowell Powell, of the Northeastern North Carolina Amateur Radio Club, informs me that the club is now affiliated with ARRL. K4KUT, secy. of the Shelby Amateur Radio Club, reports that RACES is getting off to a good start with sixteen Communicators and thirty-two antennas, a Viking 500 transmitter and an NC-303 receiver for fixed station ordered and should be installed before this appears in print. Congratulations to these two fine clubs. ACY, V.H.F. PAM, sends a copy of the 6-meter net rules and a picture of the 6-meter gang at its meeting near Winston-Salem. Thanks, Phil, for the information. Glad to know so much is being done in the v.h.f. area. I still contend that 2 and 6 meters should be utilized whenever possible. The possibilities are unlimited. We still are able to maintain communications here in Western North Carolina on 2 meters. It seems the time is ripe for a State Net on 2 meters and possibly another State Net on six meters. What say, fellows? Communicate with ACY and arrange schedules. These boys on 2 and 6 meters are very cooperative and once you try this medium you will never be satisfied with 75 meters again. Want to bet? Get with it, fellows. Hope to see each of you at Brackets Park, near Shelby.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE. PAM: K4IIE. RM: K4AVU. BWZ; QCC and K4LNJ have been awarded Section Net certificates. VIW is active on 6 and 2 meters with many out-of-state contacts. TLC is looking for 220-Mc. contacts in the State. The Spartanburg RC had a great time participating in the All Dixie Model Airplane Meet by assisting in the recovery of lost model aircraft, using both 6 and 75 meters. ZEQ and QZA plugged the meet and ham radio on TV. K4COU states that there is much mobile activity around Union and 2 new Novices, KN4KAN and KN4LCW, YBJ is busy giving code practice. HPW is the proud owner of a new beam. CXO keeps a regular schedule with two local doctors from Rock Hill stationed on the Marshall Islands. Our sympathy goes out to JCP in the recent untimely loss of his XYL. The Rock Hill RC is busy preparing for its annual hamfest, the proceeds of which will go to the support of *Scarab*. Traffic: K4WCZ 249, GAT 181, AVU 135, W4FFH 75, AKC 50, CHD 45, QCC 43, K4LNJ 36, W4EJP 21, VIW 6.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC K4MJZ reports a fairly good turnout for the first session of the Virginia AREC Nets. K4QIX is NCSing the AREC Net and EBTN, but says mobile and 6 meters foul up the traffic count. Welcome home to K4ASU from overseas duty. Bud is back in the nets full force. VFN Mgr. BGP reports over 100 regulars are active and says the welcome mat is out to all phone traffic men. HQN, formerly of Bumpass, has moved to Florida. K4HTA QSYed to Vienna, and K4ASM to Harrisonburg. The fall exodus to college is cramping CXQ. AAD and K4s BUI, DWP, MBL and RBQ. KFC's shack bulged with 35 PVRC members and visitors at the August meeting. YVG reports nice mobiling while on vacation. BRF and his XYL, IKA, maintained skeds on 80-meter c.w. while the latter was away visiting. MZJ reports a rash of gear troubles, but undismayed is adding new u.h.f. and v.h.f. stuff. K4TFL reports proudly that her OM, K4RAP, now is Extra Class. BZE took the rig to Nags Head, N. C., on vacation and kept in touch with home via VN and K4TFL. KX been confined to QNI VN, with installation of the new b.c. rig at WFVA taking beaucoups time. K4EUS reports steady activity on 2 meters, as does LTU. The latter has completed a new 10-kilomeg rig. This column should appear just prior to the Richmond Convention. "C U thar." Traffic: (Aug.) K4ELG 659, NDC 476, QIX 385, W4SHJ 314, K4QES 221, W4QDY 186, K4JKK 134, W4CXQ 94, K4EZL 73, MJZ 72, W4RHA 72, K4QER 69, W4OOL 54, K4YPR 47, TFL 37, JRE 28, KNP 28, IIP 25, W4YVG 22, KX 18, K4VWK 18, W4BRF 10, AAD 10, K4BUI 10, W3MGL/4 7, W4BGP 7, K4ASU 6, W4KFC 6, K4HTA 4. W4DVT 2, K4VJG 2, W4ZM 2, K4RZJ 1. (July) K4ELG 253, W4QDY 96, K4JKK 86,

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: HZA, KNP 14, JRE 11, W4KX 11, BZE 9.
PAM: GAD. RMs: GBF, K8HID, PBO and VYR. This is my last report as SCM. My appointment expired Sept. 18. It has been a pleasure serving all of you. I am sure you will give the new SCM your loyal support. GCN is leaving for Saudi Arabia as an employee of Aramco. We wish you luck, Cliff. LITLR has returned to Italy. Joe thanks all those who made his stay over here a very pleasant one. We are glad that HZA is back in the swing of things after his short time in the hospital. GGC would appreciate hearing

(Continued on page 126)

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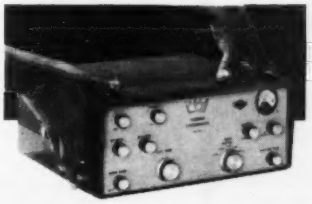

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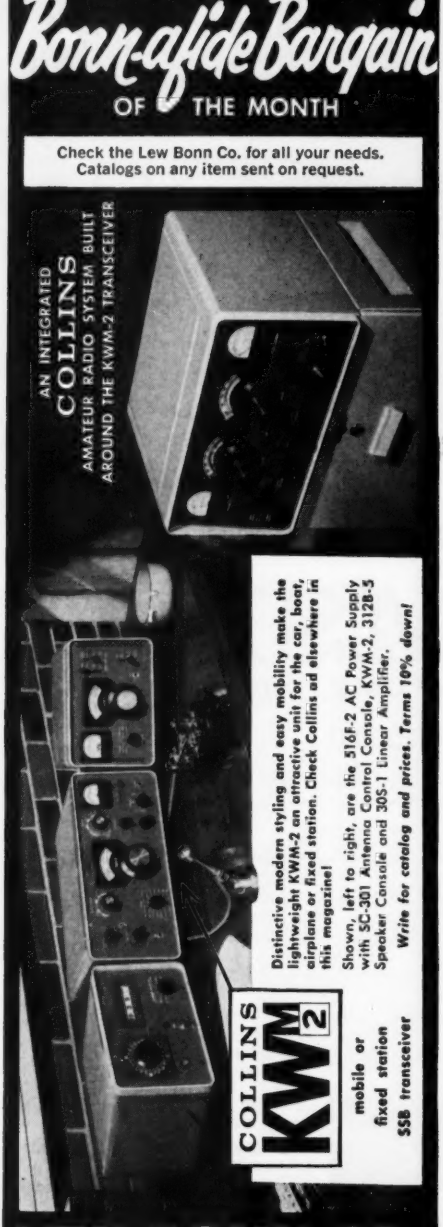
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from his friends. Harry, we miss you on the air. CLX was active lately after a short time off the air. K8AXU worked 1MMN in Vermont and 2EJO in New York on 144 Mc. IHY is a new ORS. FNI is at the University of Cincinnati studying E.E. Jim made BPL before leaving for school. K4CQA/8 publishes mathematics articles in some of the foreign math journals. CSG will be in his new home soon and will be more active. NYH moved 400 ft. and was signing /8. K8DDB plans on moving to California very soon. Best of luck, Earl. ENF has moved to Columbus. Good Luck, Tom. 73 and will look for you on the bands. Traffic: W8FNI 514, K8JLF 274, KFK 105, CNB 16, GAG 4, W8PQQ 4.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, Carl L. Smith, WØBWJ—SEC: NIT. RMs: WME and KØEDK. PAMs: CXW and IJR. OBS: KQD. Colorado appointment totals: OPS 7, ORS 9, OO 2, OES 2, EC 22. KQD now is active as OBS on 7225 kc. at 1230 MST on Mon., Wed. and Fri. New ECs are CEZ and EPH. Fourteen Section Net certificates were issued to HNN members in August. The Section C.W. Net started in September on 3665 kc. Mon. through Fri. at 2000 MST. Have you checked in yet? PG heads up the Mobile C.D. Net on 50.35 Mc. 220-Mc. signals from Texas and California have been heard on both c.w. and phone. JUQ and CLJ report traffic on 6 meters, indicating good v.h.f. activity. NVU and KQD participated in a 30-hour c.d. test for the Southern Colorado and Northern New Mexico Areas. The *Round-table* reports that 5VOF, WSK, SIN, AOA, IYC, BZA and DNP provided communications for the Leadville Burro Race. From BARC's *Bark:* Alert actions by IA, CEZ and BTV, of the Boulder emergency team, established a mobile link during a forest fire near Eldorado Springs. DX reports a QSL from DL3DP to DUA with this comment, "I've been in your country; I know the Rockies; was a POW in Colorado Springs and Ft. Logan." FQK received WAVE. ANA made BPL. Don't forget the SS Contest. Let's have more club activity this year! Traffic: (Aug.) WØANA 510, KØEDH 277, WØWME 215, KQD 196, KØEDK 174, IIT 169, JTZ 167 DCW 113, MZN 76, WØTVI 71, CBI 61, DQN 56, KØTMM 40, LCZ 18, WØBWJ 17, KØRTI 15, SLD 3. (July) WØKQD 286, KØIIT 104, WØDQN 43, KØCLJ 6.

PUEBLO AWARD

November 1-30, 1959

The Steel City Amateur Radio Club of Pueblo, Colorado is issuing a certificate to any amateur station that works five Pueblo stations during the month of November. For an additional five stations or a total of ten, one earns the certificate as well as becoming an honorary member of the club. There are approximately 170 active stations in Pueblo. Club frequency is 29,400 kc., but stations will be active in all portions of the ten meter band as well as the other bands. Stations must be worked between November 1 and November 30, 1959. Promptly send in the call letters of the stations worked with the time and date of the contact to the club secretary: Pat Radcliff, KØSQK, 2626 Cheyenne Avenue, Pueblo, Colorado.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 7OCX. SEC: FSC. RM: JBV. PAM: BBN. V.H.F. PAM: SP. The Annual Hamfest of the Utah ARC was held in August in Murray Park with 75 present. A beam rotator, a Gonset 2-meter converter, a 4-400, and two 4-125As were given away. Utah's AREC was active during the earthquake. Among those participating were HHW, K7s EBB, HFV and DKA. IBO has been appointed as OO and K7BYR as OPS. K7AUM and K7BHE are going to attend B.Y.U. this fall. Despite conditions during the summer, traffic still is holding up very well. HHW and VEO traded rigs. ZKL has a new tower and beam up. QWH has been operating portable with 7 watts. Traffic: (Aug.) W7JBV 236, OCX 225, QWH 16, K7AUM 3. (July) W7JBV 142.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. RM: ZHN. The NMEPN meets Sun. at 0730 on 3838 kc., Tue. and Thurs. at 1800 MST on 3838 kc. The Breakfast Club meets Mon. through Sat. at 0700 MST on 3838 kc. The NMBP meets on 7080 kc. Mon., Wed. and Fri. on 7080 kc. at 2000 MST. The TWN meets on 7060 kc. Mon. through Sat. at 1900 MST. Please check in on as many of these nets as you can to help support your state.

(Continued on page 128)

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BASE STATION ANTENNA

The STATIONMASTER consists of a number of collinear radiating elements fed inphase and encapsuled in a continuous weatherproof Fiberglass housing and is capable of withstanding winds in excess of 125 m.p.h. The antenna termination is a standard type N male connector protected with a neoprene housing.

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ELECTRICAL SPECIFICATIONS

CAT. No. 201-509		CAT. No. 181-509	
Nominal input impedance	50 ohms	Nominal input impedance	50 ohms
VSWR	1.5:1	VSWR	1.5:1
Bandwidth	±0.5%	Bandwidth	±1.0%
Maximum power input	150 watts	Maximum power input	75 watts
Omnidirectional gain	5.8 db	Omnidirectional gain	4.2 db
Internal feedline	RG-8A/U	Feedline	10' of RG-58/U
Frequency range	450-470 mc	Frequency range	450-470 mc

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K5VLG and K5LMJ received a charter net certificate for NMBP. New ECs are ZHN and ØOME. A new ham in Gallup is KN5UKW. ZU received a MARS Certificate of Merit. QHE's new QTH is Silverton, Colo. New amateurs in Farmington are KN5WSH, KN5WTO, KN5WTN, KN5WTQ, KN5WTP and K5WJX. The new call of the Totah Amateur Radio Club, Inc., is K5WXI with SB as trustee. Carlsbad had its annual picnic in August with an attendance of 145 from New Mexico and West Texas. A good time was had by all. We are very sorry to report that K5ORG has joined the ranks of Silent Keys. Traffic: (Aug.) K5WSP 1178, W5ZHN 188, W7AVN /5 168, WØOME/5 85, K5LMJ 72, DAB 27, GOJ 25, DAA 17, VLG 11, W5ZU 11, CIN 9, VC 6, K5LWN 5. (July) W7AVN/5 148.

WYOMING—SCM, Lial D. Branson, W7AMU—SEC: CQL. The Pony Express Net meets Sun. at 0830 MST on 3920 kc. The Wyoming Jackalope Net meets Mon. through Fri. at 1200 MST on 7255 kc. for traffic. The YO Net is a c.w. net on Mon., Wed. and Fri. at 1830 MST on 3610 kc. A new Novice ham in Moneta, KN7IUF, who received his license July 8, has worked 14 states with 10 confirmed. Please help the YO Net out by checking in on 3610 kc. AMU, your SCM, attended the WIMU Hamfest at Big Springs, Idaho, July 31, Aug. 1 and 2. YXM, Natrona County EC, held a green alert Aug. 29 and 26 hams checked in and then went to the top of Casper Mountain for a ham picnic. YXM, Salvation Army Commander in Casper, and AMU made a fast trip to Virginia City and Ennis, Mont., then to the West Entrance of Yellowstone Park with two-way radio communication equipment.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4HKK—SEC: WJX. PAMs: K4BTO and PHH. RM: W4RLG. Congratulations to K4ANB on a new XYL, PVG and his XYL on a new baby girl, MI and RLG on a new shack, CJW on a new Triband beam, K4APM on a new OO I certificate and K4IPF on a new 6-meter rig. K4PHH reports they now have paved streets in his town. K4MMO has moved to his new QTH. WHW has been forced to return to the hospital in Mobile. We all wish him a speedy recovery and hope to see him back on the air soon. K4OCV has been appointed Asst. EC for Marion County handling 6-meter activity. Glad to hear that the Huntsville Area has a new club for mobiles. Parrish has a new ham who is a Methodist minister. ANT is having a wonderful time these days with a new 60-ft. tower and Triband beam. He has three transmitters to work DX. Several of the reporting stations complained of hot WX this month. Maybe that accounts for lack of other news to report. With the fall weather approaching get your stations back in operation again and mail your news and traffic reports. Traffic: W4RLG 522, K4PFM 123, W4MI 51, OKQ 44, PVG 35, K4UEE 33, SAV 30, JSO 28, ZXX 24, AOZ 21, BTO 20, JDA 17, W4CIU 16, CIN 14, RSB 12, K4RIL 11, IPF 10, PHH 8, W4WHW 7, ATK/46, K4KJD 6, YGS 6, JSP 5, W4HKK 5, K4CXC 3, KN4FTC 3.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: K4SJH. PAMs: TAS and RMU. We would like to thank K4BY for taking over the activities of the Route Manager during K4SJH's absence. We now have a first for v.h.f. in Florida. RMU and FNR have been able to pass traffic in one hop from Jacksonville to Ft. Lauderale on 50 Mc. They are able to keep regular skeds, which should be a boost for other v.h.f.ers in the State. RMU also is on 220 Mc. running 400 watts into a thirteen-element Yagi. The Hollywood ARC's splash party was a huge success. The DEN Annual Dinner was attended by a large group of hams and their wives. The highlight of the evening was a demonstration put on by the telephone company in long-distance dialing. EHV now is equipped with emergency power. PNS is now solid on 50 Mc. with a VHF-152 and a Viking 6N2. DVR is putting up two 100-ft. towers. K4EHY now has his General Class license. K4ZDV now has his Tech. Class license and is back on 2 meters. The Sunshine State Novice Net is coming along fine and handled 55 messages in August. The Floridoras now have their Directory out. Hope all you YLs now have your copy. The Daytona Beach Gabfest at Ormand Beach was a big success. Your SCM was there and had a swell time. Tampa, Bradenton, Orlando, Jacksonville and many other cities were represented. NKD, EC for Orange County and Field Day chairman for the Orlando Radio Club, was presented the *Florida Skip* Field Day Trophy by yours truly for the staff of *Florida Skip*. Traffic: (Aug.) K4SJH 328, KDN 320, BY 212, LCF 146, ILB 136, LCD 132, AHA 125, W4GJI 82, K4BLM 75, W4DVR 72, IYT 67, K4COO 63, W4TDT 54, KN4FMA 46, W5TKI/4 45, KN4ISR 41, K4EHY 36, BNE 33, AHW 29, W4BIL 28, K4RNS 27, W4EHW 20, KN4EFR 10, W4TAS 10, IMU 9, K4JJZ 9, MTP 8, OYR 8, MBB 6, W4FNR 5, KN4GLI 4, W4RMU 4, K4BZ 3, LDR 2. (July) W4AHZ 24.

(Continued on page 130)

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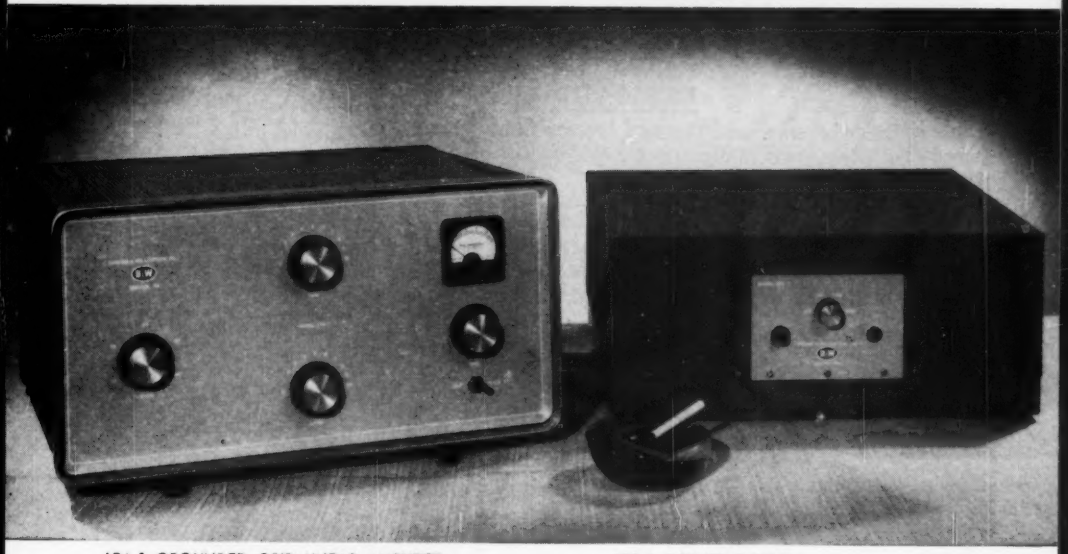

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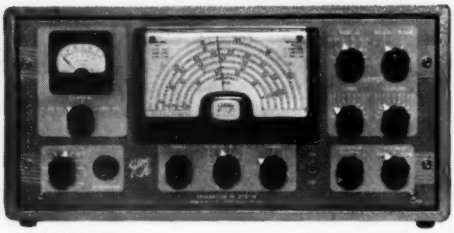

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WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: AXP and BVE. Perry: KQP has increased power with a Valiant. Taylor County now has 3 AREC members. Madison: PBO is the new Madison County EC. St. Joe: RZM, EC, conducted an emergency drill with the Red Cross. Four fixed stations and three mobiles were on. RZM and RZF are active NCSs for the West Fla. Phone Net. Panama City: K4GVV is the new Bay County EC. PTP is active on 10 meters. Several P.C. stations are checking into the 75-meter net on 3840 kc. OID has renewed his ORS appointment, Ft. Walton/Eglin AFB: C.d. funds have been obtained to buy two 10-meter Communicators to link the north and south ends of the county. The Eglin ARS has joined MARS and received added equipment for the club station, SRX. Four operating positions are set up, including a DX-20 and a receiver for Novices. K5QJD put out an FB edition of *Bandspread* as guest editor. Your SCM has moved to a new QTH. Pensacola: GSY is the new president of the V.H.F. Club. K4UKG is president of the NAS Club. HIZ has been reappointed EC for Escambia County. ZJF arranged a tour of WEAR-TV for the local hams. GRO and SOI arranged a demonstration of ham radio for the Explorer Scout troop. Traffic: (Aug.) W4GAA 10. (July) W4BVE 64.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: PMJ. PAMs: LXE and ACH. RM: DDY. The GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0800 Sun.; GSN Mon. through Sun. at 1900 EST on 3595 kc., DDY as NC; 75-Meter Phone Net each Sun. at 1330 EST on 3995 kc., K4JTC as NC; GTAN Sat. at 1000 EST on 7290 kc.; Atl. Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc., KWC as NC.; GPYL Net Thurs. on 7260 kc. at 0900 EST; GAN on 7105 kc. at 1800 EST Mon. through Fri., K4KZP as net mgr. K4EJI is a new member of the Air Force MARS. K4MIH is now an ORS and also made BPL. The Columbus Ga. High School Amateur Radio Club has applied for a call. K4ETY will be the trustee. K4UWJ, now with 108 countries worked and 79 confirmed, uses an HT-32, a 75A-4 and a Mosley Triband beam. School still is keeping K4LEM tied down. KN4MDR is a new Novice in Cedartown. KN4YMI is now Technician Class. K4TFY is doing a nice job on 220 Mc. Give him a call and set a schedule. FWH transmits bulletins on 50 and 144 Mc. The Atl. 2-Meter Net meets on Mon. at 2000 EST on 145.350 Mc. Cochran Bleckley County is developing an AREC program and RACES under local c.d. sponsorship. K4SET is going into the Navy. SVH now is in Atlanta. ZTJ is EC for Whitfield, Murray and Gordon Counties. K4DNH is EC for Fulton and DeKalb Counties. K4JQM is EC for Wheeler, Montgomery, Toombs and Emanual Counties. If you are interested in becoming an EC, mail your application to Georgia SEC, Mel Rooser, PMJ, and list your county. You must be a member of ARRL for this appointment. Don't forget to renew your present appointments annually. They last only a year and should be renewed. Traffic: K4EJI 166, MIH 131, VTH 77, BVD 66, LVE 66, BAI 65, W4DDY 44, K4PHA 44, PYM 28, KZP 10, VCM 9, UWJ 2, LEM 1.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: AAA. WT renewed his OPS appointment. AMU has been appointed as Class I OO. AMI, Guayama, a registered station in the AREC, has a 5-band doublet plus a 10/15-meter Quad and an emergency power supply. ALY has a new ten-element stacked array on 50 Mc. AMG is on 50 Mc. with a TBS-50, a Gonset converter and a five-element beam. CK has a new P&H converter to use a 20A on 50 Mc. to drive a Gonset amplifier. AOD and AOF are on 50 Mc. using DX35s and Intl. Crystal converters. EC ABN has organized a 50-Mc. v.h.f. net sponsored by the PRARC. Net members are AAB, AQQ, ACH, AQN, AFH, AHK, AAN, ARB, AHQ, ALD, ASH, JM, ALL, AEA, AEJ, AMJ, ALY, AHQ, AIS, AHP, AMH, ALX, ABN, CK and ES. ABN has worked 43 states on 50 Mc. ACH worked 18. W4FNR, Ft. Lauderdale, Fla., writes that he has worked 21 KP4 stations on 50 Mc. and is awaiting the first opening to work 4 more for a WPR25 Award for 50 Mc. Help him along, you 50-Mc. operators. The Antilles Weather Net was alerted Aug. 18 when Hurricane Edith developed around Martinique and KV4BZ on his yacht at St. Thomas acted as NCS, keeping the net on stand-by from 3 P.M. to 10:30 P.M. on 7245 kc. WT, AKH and AOD have been acting NCSs of the PR Amateur Emergency Net on 3925 kc. Wed. at 7 P.M. AKH has a new DSB-100 with VOX and has put up an antenna for 3925 kc. AKB now has a v.f.o. KV4BA added a t.r. switch to his station for d.s.b. operation. KD received phone/cw cards from XE4B, Socorro Island, to bring him up to 242 on c.w. and 86 phone confirmed. KD also worked VS9OM, YA1AO and VQ9AIW for DXCC 253. CC is applying for WASM-II and also worked VS9OM, YA1AO and VQ9AIW. W4LEA is now KP4ATM and has a Heath s.s.b. generator and a couple of new beams. DJ's

(Continued on page 132)

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10-meter sked with W6NUN has been changed to 15 until propagation conditions are better on 10. Your SCM has been on vacation and ran into W2IEK and WA2HYY in New York and then visited KV4AA and KV4BA. Traffic: (Aug.) KP4WT 139. (July) KP4WT 190.

CANAL ZONE—SCM, Ralph E. Harvey, KZ5RV—JN and his family are back from a warm stateside vacation. RV and VR have returned from their vacation in Florida and California, where they took part in the ARRL Southwestern Division Convention in Pasadena. They have ordered a new Viking Valiant and hope to have it on the air before long. RM and KA arrived here in early September. KQ is in the States on emergency leave. QQ is attending school in Indiana. AU is now referred to as "Doc" Adams. While Roger and his family were boating on Madden Lake they answered a call for assistance from a native boat and helped in the birth of a child to the boat's occupant. Ex-JS is now W4FWO in Atlanta, Ga. Ex-KZ5DN is now W5MJB in Abilene, Tex. FL is now operating s.s.b. WA's wife was in the hospital but has returned home and is doing well. Traffic: KZ5OB 101, RJ 60, AD 32, LC 18, HO 12, MN 11, VF 9.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP. RMs: W6BHG and K6HLR. PAMs: W6BUK and W6ORS. The following stations made BPL in August: W6ZJB, K6HLR, W6WPF, W6GYH, K6MCA, K6TJG and K6TPL. Congrats, fellows! W6WPF has RTTY going on 2 meters for traffic to San Diego. K6TJG is on with a new Apache. K6TPL really is knocking off the JA stations on 40 meters. K6KYJ is back from a summer in the High Sierras. K6YNB made his radiotelephone 2nd-class commercial ticket. Congrats, Wayne! W6CIS has a tear-drop trailer for camping and fishing! W6EBK also has RTTY going on 2 meters. WV6FXJ worked a WH6 on 15 meters for his first contact off the continent! K6SIX did a fine job on the Multiple Sclerosis Fund Drive on 6 meters. Two fellows from K6PXQ's Boy Scout radio classes made Novice! W6UFJ has a new DX-40 on the air. K6PZM reports the SoCal 6 Net is growing fast and handling lots of traffic. K6PLW is back from a vacation in Canada and Yellowstone. WA6ARR reports that he is trying to form a 6-meter c.w. net. For details contact him on the air or by mail. K6SVG is building a new *v.f.o.* for 20, 15 and 10 meters. W6NKE put up a new three-element beam on 10 meters and is working out fine! K6EOK reports some fine *E*-layer openings on 6 meters to Oregon and Washington. W6OYM is monitoring 6 meters for stellar noises with some fine home-brew gear. W6MEP reports that K6MYK, the 2-meter repeater station, was very helpful during Capt. Evans Catalina Channel swim. WA6BGM reports a newly-formed amateur radio club is now meeting once a month in Monterey Park. Support your section nets: C.w., the Southern California Net on 3600 kc. at 1930 daily; phone, the SoCal 6 Net on 50.4 Mc. at 1930 daily. Traffic: (Aug.) W6ZJB 1616, K6HLR 1195, W6WPF 1061, W6GYH 839, K6MCA 620, K6OZJ 407, K6JSD 225, K6TJG 221, K6GCC 219, K6TPL 172, W6BHG 128, K6LJY 100, K6PZM 92, K6PXQ 38, W6CK 37, K6SIX 30, K6EA 27, W6USY 24, W6UQO 20, W6BUK 12, W6NTN 12, W6CIS 6, K6PLW 4. (July) K6MCA 763, K6TJG 115, K6EOK 6, W6CMN 1.

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. PAM Copper State Net, 3880 kc.: FMZ. K7HNP, of Phoenix, passed away as the result of an explosion and fire in his ham shack. OUE, DZG, UXZ, ZZT and ZTA are working s.s.b. There will be a lot more on in another month. 6MLZ, Southwestern Division Director, is keeping skeds with Arizona clubs on 3880 kc. s.s.b. Anyone who wants to is welcome to join in. Listen after the net closes. Traffic on the state nets has been quite low but is picking up as summer comes to a close. Traffic: W7CAF 32, OIF 18.

SAN DIEGO—SCM, Don Stansifer, W6LRU—K6BPI broke over the grand mark in traffic handled for August with a total of 1107. He operates on all bands including 144 Mc. and uses a.m., c.w., s.s.b and teletype. The W6 ARRL QSL Bureau, now under the sponsorship of the San Diego DX Club, P.O. Box 16,006 San Diego 16, Calif., is in full swing. It is estimated that over 100,000 cards were processed during late August and September. The club wishes it to be known that each card processed will have the date stamped on it. K6ZCR and K6HAH, with their family, now reside in Palo Alto. K6BCG, founder and past-president of the South Bay Amateur Radio Society, has been transferred to Washington, D. C. K6BTO, in National City, reports that the San Diego Micro Wave group is now meeting on a monthly basis. If interested, please contact K6BTO. W6EOT hit a high in traffic-handling for August with a grand total of 1386. And this a summer month! W6LRU met W6CIS and W6LHY while on vacation in Inyo County, Calif. Those operating the National City C.D. Headquarters on

(Continued on page 134)

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VFO's: Dual VFO's permit transmitting on the receive or any other frequency
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SENSITIVITY: 1 microvolt for 6 db S/N
SELECTIVITY: 3.1 kc mechanical filter plus a T-notch filter
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AUDIO DETECTOR: Balanced detector for SSB and CW, diode detector for AM
MODE SWITCH: Selects up or low SSB, or up low AM, or CW
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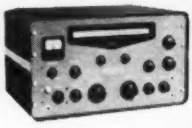

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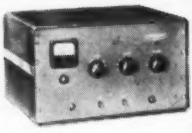

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Mon. nights are K6s BUM, TFT, VKW and WV6EAU. New hams in the Escondido Area are WV6HOW and WA6HLA. Traffic: (Aug.) W6IAB 2088, W6EOT 1386, K6BPI 1107, K6ZCR 121, W6DFR 79, K6ZRD 21, W6ELQ 5. (July) K6BPI 522.

SANTA BARBARA—SCM, Robert A. Hemke, K6CVR—The Santa Barbara Radio Club had an FB hamfest at Tucker's Grove with about 250 in attendance. An SB-10 was won by K6SDE. W6ENR gave W6HUT a big helping hand with transmitter hunts. Most of the Fishy Hamfest gang was there. A new appointee is WA6BLM as OO and OPS. W6YIU has just returned from an exciting 120 miles down the Colorado River on a rubber raft. The Santa Barbara AREC had a transmitter hunt. K6DXW, CVR, W6JRB and W6HDO found the hidden transmitter in that order. K6OFO operated a ham station from the Oxnard Fair Grounds. W7PTO/W6, recently moved to Santa Barbara, has an SX-100 receiver, a DX-100 transmitter and dipoles on 75 and 10 meters. K6IU moved his shack from the garage into the house. He said it was too cold in the garage. He also added a three-element beam for 15 meters. Traffic: W6YCF 2.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—Asst. SCM: E. C. Pool, 5NFO. SEC: K5AEX. PAM: BOO. RM: ACK. KCQ has been transferred to Omaha. Congratulations on your promotion, John. The Richardson ARC operated a radio booth at the Community Fair held in August. The DARC has started selecting the executive committee for the 1960 Gulf Coast Convention. ACK is going to Texas Tech. and has resigned as RM. Jay has done a fine job and will be missed on the c.w. net. GY thinks it is a good idea to check in on the NTO with c.w. as it makes the phone boys conscious of another means of communications. K5QOV is the new president of the Mineral Wells ARC, GHU is vice-pres., EBB is secy.-treas. New hams in Mineral Wells are EBB, HMG, KN5VDN, VMK, VRR, VTB, VTE, WIJ and WIH. Correction: TPG should have been TGP in my June report of Field Day messages received. I am looking for more news from the eastern part of the section for this column. Many old-timers will remember when we had an All-Day Singing and Dinner on the Grounds, held in the Church Yard in the country, where the XYLs tried to out-do each other with the best fried chicken, pie and cake. If you are longing for this type of entertainment you should attend the annual Waco Hamfest held at Cameron Park each year. I had the pleasure of attending again this year and I think the XYLs spent the year in learning to prepare better foods. Traffic: W5ACK 417, UTW 406, BKH 280, SMK 160, K5IDZ 137, W5GY 106, K5ETX 87, IPG 67, W5GSN 54, LR 20, DYU 17, VEZ 12, K5EGB 9, W5KYM 8, K5KBH 7.

OKLAHOMA—SCM, Adrian V. Rea, W5DRZ—SEC: UYQ. RMs: VVQ and JXM. PAMs: K5DLP, EJK and VCJ. These are new appointments; hard working fellows who want to do a good job for you. Thanks to all for your patience while I get my feet on the ground as your new SCM. Your past SCM, FEC, did a wonderful job. Hats off to you, Dick. There were 152 registered at the recent Oklahoma City Hamfest, sponsored by the Aeronautical Center ARC. Thanks to that club for a wonderful time. SCM Award, "Operator of the Month" goes to BNP for getting us off to such a good start working all Oklahoma counties. GVV has a new HQ-170, EHC a Collins 75S-1 and K5KTW a Globe Champ 350. Met a former Oklahoma SCM, GFT. Russ is now ØCOX. Congratulations to the Jackson County Amateur Radio Club, now an ARRL affiliate. New officers of the Muskogee Club: K5PRW, pres.; K5BPY, vice-pres.; WAX, secy. The Bartlesville Club scored again. It now sponsors an Explorer Post; the field of activity is communications. Tulsa and Oklahoma 6-meter mobileers, not satisfied with on-the-air contacts, met at Stroud in mid-September for a personal get-together. Traffic: W5VVQ 257, K5JGZ 174, W5DRZ 100, K5CAY 89, BPV 43, W5DEE 43, K5HIV 38, W5FEC 33, K5INC 25, W5MGK 24, K5OJD 24, W5MFX 22, PNG 22, CCK 20, UYQ 16, UZV 13, K5LUR 12, W5WDD 11, K5QEF 9, BNQ 7, EZM 7, JOA 7, ELG 6, W5SWJ 6, K5CBA 5, W5WAF 4, EHC 2.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. PAM: ZIN. RM: K5BSZ. K5RYS has a new Hornet beam. DCS is the new net control for the South Texas Emergency Net, with K5ASD as alternate. VVF is a new OO at Kermit. K5MXO is a new OPS in Houston. The 7290 Traffic Net, under ZIN and various net controls, did a very FB job during the hot summer months. Keep up the good work. K5OIM has moved from Abilene to El Paso. The El Paso Amateur Radio Club again is running Novice classes. Anyone interested should get in touch with them. K5IPY and his XYL, K5WKN, have moved to the Rio Grande Valley. GFK and K5DQN soon

(Continued on page 136)

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will be s.s.b. with new home-brew rigs. K5JLF and MFS have been doing some trading. JLF wound up with an AF-67, and MFS with a Valiant. KFI has a new Hornet Tribander. K5SJA and UNC are the proud owners of a new B&W 5100 and sideband generator. Heard on 2 meters were EBI, K5INU, KTX, CQN and TGQ. K5DTI has moved to Houston. K5URD and WKF have dropped the "N" from their calls. ETA, QKF, QEM and K5EWK attended the hamfest at McAllen. Traffic: K5RYS 181, LGH 137, W5ZIN 62, BHO 32, K5KBD 9, MXO 3.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCMs: A. D. Solomon, VE1OC, and H. C. Hillyard, VO1CZ. SEC: BL. New appointments include LT, EC for Charlotte, N.B. We wish to extend our deepest sympathy to Mrs. White, AYL, on the passing of Fred FL. Re-elected officers of the NBARA are ACJ, pres.; ABZ, vice-pres.; UL, secy.-treas. UT, ex-3EA, is now active as VE1AFN. New calls from Goose Bay, Labrador, include VO2s JH, GB, FS, MK and AW. Don (2AW) also reports that amateurs interested in their WAG (Worked All Goose) certificates should get on 28.4 Mc. at 11 A.M., Labrador time. Sun. when members of the GBARC hold their weekly ragchew. Newfoundland mobiles VO1s BU, CZ, EZ, BJ, DE, AO, AK, FD, KØIHB and W2ZRX assisted in activities during the Royal Visit. W2ZRX passed through here on his return to the U.S.A. Sorry I missed you, Bob. Recent visitors to the section were 1HB/3, 3GX (ex-1PF) and CGO (Doreen, ex-1ABT). Congratulations to VO1s BD, BV and DA and best wishes to their XYLs on their recent weddings. Traffic: VE1ADH 23, DB 10.

MARITIME—SCM, D. E. Weeks, WE1WB—Asst. SCMs: A. D. Solomon, VE1OC, and H. C. Hillyard, VO1CZ. SEC: BL. We are glad to present above the July activities which were inadvertently omitted from October *QST*. Sorry. Congratulations to the Halifax-Darmouth amateurs whose efforts made the recent convention at St. Mary's University such an outstanding success. Highlights of the convention include: (Awards) The GR Memorial Trophy, Halifax Police Boys Club; the Brown-Holder DX Trophy, PQ; the Leo Doucette Memorial Plaque, RJ; the VE1 Contest Cup, VN. The transmitter hunt winners were BC, DP and AEB. ABV won the code contest with HJ as runner-up. ACJ and Howie's XYL won other prizes. PQ is getting good results with his Triband quad antenna. MZ (ex-VO) is active from the Arctic as /VE8. Recent visitors to the VE1 district included W1TV, W1MB, VE3EAY and W9BYB. Amateurs in the VE1 district once again are reminded that additional care should be used when operating on or near 3750 and 3790 kc. to make certain no interference there is caused to the nets which use these frequencies. You are especially requested not to use 3750 kc. from 1830 to 1930 unless participating in either the Nfld. or Maritime Nets. Traffic: VE1OM 8.

ONTARIO—SCM, Richard W. Roberts, VE3NG—From all the reports the VE3 ham does *not* stay put during the vacation season. KM went to Goderich, NG to Meaford, DTO to Port Severn, AJA to Meaford, DVG to North Carolina and Maine, AML to Windsor and Georgian Bay, ELC to England, TL to all of Europe, BJV to Nova Scotia, NF to Toronto, CFR to W-Land, MR has returned from South America, AEJ has a new beam, RH has a new transmitter and beam, CO is active on 75 meters, BVF is now known as BP. The time has arrived for the endorsement of your certificates by your SCM. AKC was portable in Algonquin Park, BUR was in W1-Land, the London ARC passes traffic to London residents on Sundays from members, BJV reports that Halifax has changed since the war days. Hi. AIB and OE were thanked for their efforts in an accident on the highway by the Ontario Province Police. AVS reports three weeks blackout. NN was in the hospital but is OK now. ARRL advises Ontario members that OO appointments are available only to licensed operators. May I point out once again that to net the net frequency *please cut out your carrier*. Take a good listen sometime. This is supposed to be the Class A band. While on the same subject, give the mobiles a chance. In most cases Field Day reports were better than last year. We might have a real competition. 2BE goes to Europe soon for our say to the rest of the world. Traffic: (July) VE3BZB 107, BUR 98, AUU 75, DPO 61, NG 58, CFR 32, NO 31, DVG 27, DTO 23, OE 20, DWN 15, AOE 14, GI 7. (June) VE3AUU 78, CFR 45. (May) VE3AOE 9.

ONTARIO—SCM, Richard W. Roberts, VE3NG—We are glad to present above the July activities which were inadvertently omitted from October *QST*. Sorry. Some of the mobiles and portables heard in August were OD, DZA, NG, AHL, ADD, CO, BYQ, DTO, DVM, BIV, AJA, AKC, DTB and KM. BJV visited VE1-Land. Millie,

(Continued on page 138)

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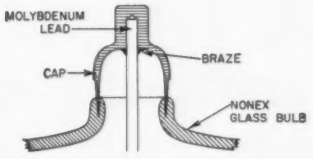

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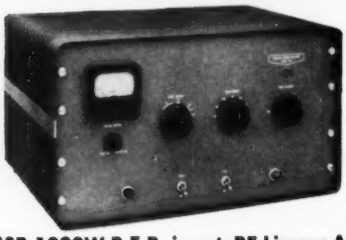

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EII, announces the arrival of a new jr. operator. We miss TX on the net. DMI and his XYL, DVU, are now at Corbeil, near North Bay. ARF commutes from Toronto to Lake Mazinaw. ELC visited G-Land and GM-Land. Ontario amateurs are warned to be cautious of any infraction of the D.O.T. regulations. Be careful. Read your regulations *now*. Old-timers and new comers make no difference to the D.O.T. BUR says c.w. traffic is on the decline as compared to former years. AVS was in the Toronto Area. W8LOJ was guest speaker at the August meeting of the Sarnia gang. Bill Hearing and Bob Helm received their Novice Class tickets. W8TSC/VE3 operated at Ipperwash Beach. AML has been visiting as many groups as possible on his vacation in Ontario with regards the Ontario Amateur Radio Federation. AAO has been very busy with plans for the London Convention. SWLs are advised that OO and other ARRL appointments are available only to *licensed hams*. Radio Clubs, please advise your SWL members. BZI was on the West Coast this summer and worked some mobile. DTB has gone mobile. MB is now 4ZK. ACW is in Oklahoma City. BBY is QRT? BST got burned out. BWM is with the RCAF in France. CCA has left for G-Land. Look for him in December from "over 'ome." AUU visited in VE1-Land. Traffic: (Aug.) VE3BZB 132, BUR 94, DCX 56, KM 53, NG 51, CFR 49, AUU 48, DPO 48, ELC 21, DTO 19, DWN 17, EAM 13, DLC 3, AVS 1. (July) VE3KM 30.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—Nets: OQN, 3535 kc., 1900; Que. Fone Net, 3780 kc., 1845. XR left for Vancouver and wishes to be remembered to all his friends he was unable to see before leaving. AKT runs weekly ham articles in a leading Montreal paper. AIO moved and now is interested in 6 and 2 meters. K2VTX/VE2 received appointment as OES and also made the BPL. WT made the BPL for the second month in a row. ABE operated as FP8BG from St. Pierre and amassed a great QSO total; he also operated as FP8JC. AEW found mobile useful for home QSOs during vacation. IK drew a blank on working any VE2s during a Maritime holiday but contacted FW and HO, mobiles on P.E.I. We express deep sympathy to AQY on the sudden loss of his XYL. BE received a royal send-off for his Geneva trip. BG keeps the 3790 kc. spot warm during BE's absence. BCB, with a DX-40 and an S40-A, deserves much credit. He is blind and operates all bands from Iberville. ASL, of Belgian origin, is active on 80 and 40 meters at St. John. APX, the St. John Radio Club, reports a successful Field Day. SX gave a demonstration of ham radio at CHLT-TV. SG tested emergency gear at Fort Lennox. AIL is going mobile. AOK and AX like 2 meters. AWD, PS, AMO and AIL, with their YLs and XYLs, enjoyed a corn roast at ARA. AOZ has erected a 70-ft. tower. LI is expected to do likewise in the spring. BAY, South Shore, is using the Collins S-Line. Ex-DX, PX, now is acitve as 3AOP, Port Colborne. IQ left Lachine and now is active on s.s.b. at Chateaugay. ACU's new QTH is Baie D'Urfee. DY recuperating from an illness, considers retiring. Traffic: (Aug.) VE2WT 391, K2VTX/VE2 189, VE2DR 114, IK 5. (July) VE2AZI 172.

ALBERTA—SCM, Gordon W. Hollingshead, VE6VM—PAM: PV. An Alberta section c.w. net, temporarily known as ACWN, is now in operation. It is the aim of this net to provide good provincial coverage, so let's hear from you. Time: 1830-1900 MST Tue., Thurs. and Sat. on 3600 kc. RF and CI both mobile, recently were participants of a car cavalcade traveling from Grande Prairie to Jasper via the new forestry road. Thirty-two cars took part, with BL in Grande Prairie as control station and ES relaying. Cavalcades from Saskatoon and Edmonton without ham mobiles were met by the Grande Prairie group at Jasper. YE relayed messages home from the entire group. WK now is stationed in Pincher Creek. OY is back after a year's absence on 75 meters. There is a new Mosely vertical trap at VM's QTH. AX is sporting new twin harmonics. Traffic: VE6YE 24, BL 12, PV 11, SS 7, TG 7, BA 4, FS 3, IB 1, VM 1.

MANITOBA—SCM, James A. Elliott, VE4IF—AY has had trouble with his transmitter so has been off the air for some time. 5AW, formerly 6AL of Edmonton, is back in his home QTH at Moose Jaw. 6HM and his XYL contacted some of their friends in Winnipeg while en route to the Martimes on vacation. Charlie spends about 90 per cent of his operating time handling traffic on 20 meters for the boys in the Arctic. BR and CB have had antenna troubles. JY, our legal adviser, keeps very busy on the Manitoba Net. He is net control 99 per cent of the time and does a major job in traffic-handling. CP, one of the ardent s.s.b. operators in Manitoba, does most of his operating on the higher frequencies and all on s.s.b. We caught Blair on 75 meters during his vacation. He was using the mobile rig. EH, formerly 5EH at Saskatoon, is on the air again and is located at Waboden in Northern Manitoba. He is on 75

(Continued on page 140)

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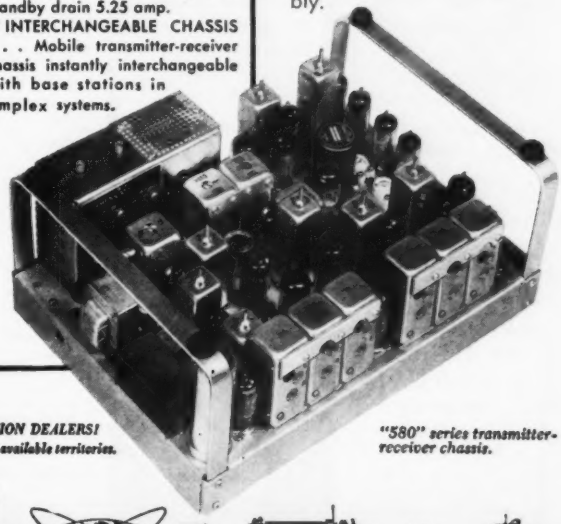

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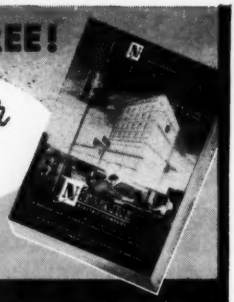

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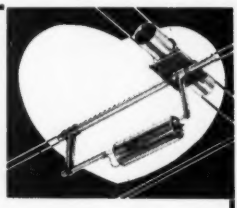

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MACH ELECTRONICS 3526 Blue Ridge Cut Off Kansas City 33, Missouri

meters running about 600 watts and puts a very FB signal into Winnipeg. 5DS, from Sturges, Sask., was in Winnipeg on his vacation. While in the city he called at IF's for a short visit. PE was the only one at home as the rest of the ham family was on vacation. Traffic: VE4JY 16, LF 4, MJ 4, PE 3.

Log Periodic Antennas

(*Continued from page*)

number of elements increases slightly. Changing the apex angle to 15 degrees will permit 10.5 db. gain, but the antenna will become much longer and the number of elements will be considerably greater. As always, you do not get something for nothing. The azimuth beam width does not drop too much, being in the order of 57 degrees as compared with 65 degrees.

Another method is to interlace four half-structures with the same apex point, with each pair having a different spacing angle. Another is to build two identical units side by side with the same apex feed point. The problem here is proper phasing of elements, as improper connection can produce a twin-lobed difference pattern.

One of these antennas aimed vertically with the apex at top of a mast, using the elements as the guy structure, should be a natural for satellite work, as it could operate on 20, 40, or 108 Mc., and any other future frequencies in between, and have the same gain and beam pattern for any of the frequencies. A gain of 10 db. or more could be secured, and by arranging the antennas in the form of a pyramid the two sets of elements could be phased either to produce a sum pattern with one main lobe or a difference pattern with a null directly overhead, like a doughnut with the hole at the apex feed point. The feed coax in this case could be fed up through the support mast.

It seems time that we amateurs take notice of the excellent characteristics of this antenna design and put it to use. How about you? The writer will be most interested to hear of the results from anyone who tries it out, and R. H. DuHamel, the originator, will undoubtedly be interested, also.

Appendix I

Definitions

E_1 = length of longest element approximatley ($\lambda/2$ at lowest operating frequency).
R_1 = distance from apex to center of E_1, the longest element.
E_2 = length of second longest element.
R_2 = distance from apex to center of E_2.
τ = periodic function.
α = apex angle or horizontal angle made by radials from apex to ends of elements.
ψ = apex angle or vertical separation angle between the two half-structures.

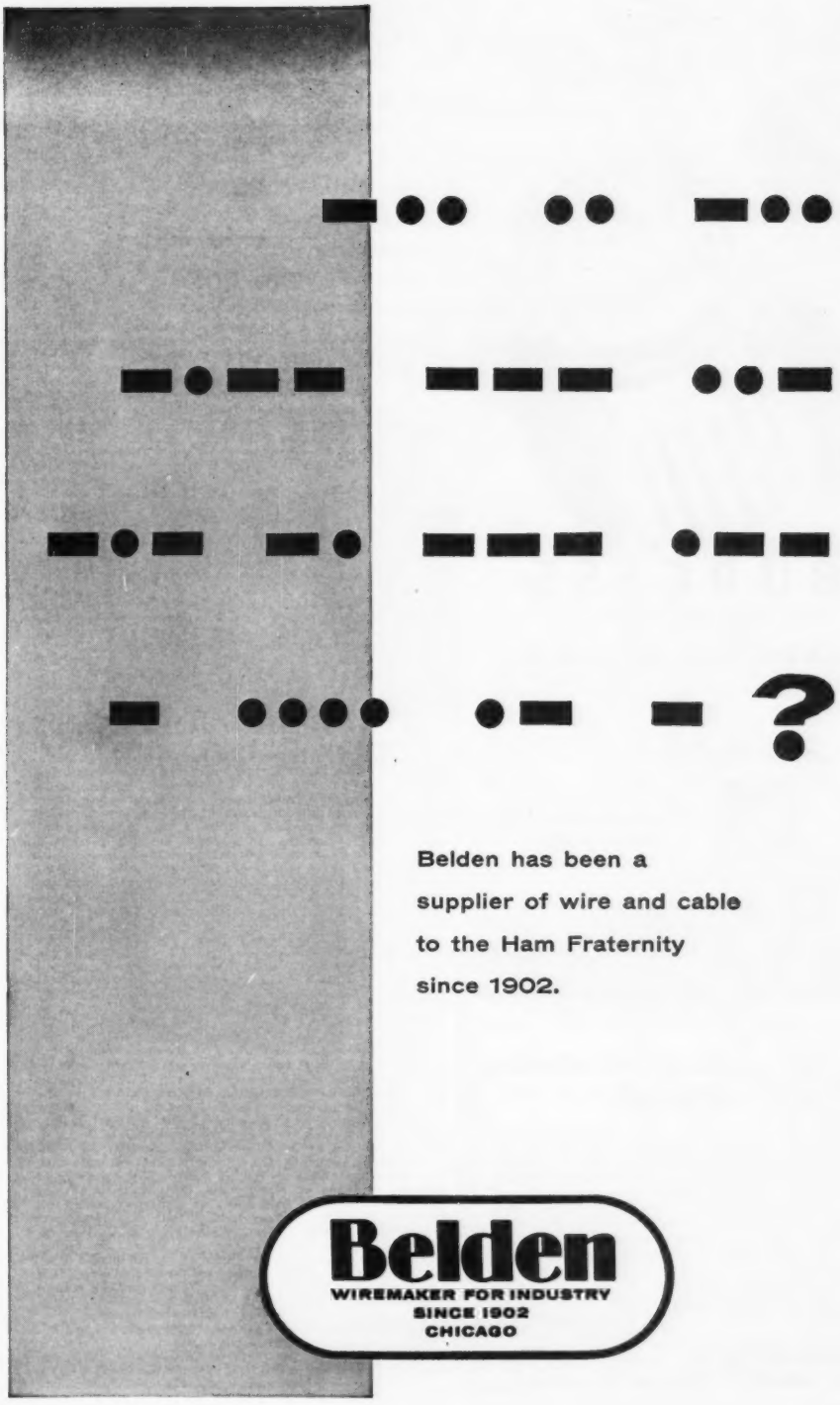
Appendix II

Design Equations

$$E_1 \text{ in feet} = \frac{492}{F(\text{Mc.})}$$

$$E_1 \text{ in inches} = \frac{5756}{F(\text{Mc.})}$$

(*Continued on page 142*)



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$R_2 = \sqrt{\tau}\, R_1$ when $\tau = 0.6$, $\sqrt{\tau} = 0.775$, $R_2 = 0.775R_1$
when $\tau = .707$, $\sqrt{\tau} = 0.841$, $R_2 = 0.841R_1$

$R_3 = \tau R_1$, $R_4 = \tau R_2$, $R_5 = \tau R_3$, etc.

$E_2 = \sqrt{\tau}E_1$ when $\tau = 0.6$, $E_2 = 0.775E_1$
when $\tau = 0.707$, $E_2 = 0.841E_1$

$E_3 = \tau E_1$, $E_4 = \tau E_2$, $E_5 = \tau E_3$, etc.

QST

How's DX?

(*Continued from page 70*)

fray . _ . _ . _ KG6SA commenced issuing Saipan QSOs on 20 phone in early August from a Loran site on the island. W4TK caught Giles on the short bounce . _ . _ . _ W3AFM (ex-KC6ZZ-KC6AT) left his Viking II on Ponape in the hands of KC6s AS and AU who prefer the A3 approach . _ . _ . _ KM6BT tells W3PWN he's only 14; his KWM-1 and vertical satisfy many Midway-hunters on 20, 15 and 10 meters, c.w. and sideband . _ . _ . _ VK9AD of Norfolk Island is said to be the first really rare one to qualify for RSB's Worked-All-Bermuda certification. Stan swung it by capturing VP9s AX BN CY DC DU EN G and WP on 21-Mc. phone. VP9BDA informs, "Although the award has been available for about five years, just five certificates had been issued previously, all to W/Ks. At this writing only VP9G is active in Hamilton parish and only VP9EN in Southampton. All other parishes have two or more stations." . _ . _ . _ From W8KX: "DU1FM is a father-and-son station. Young Reny operates most of the time now, and dad Felix has been licensed since 1936, originally as KA1FM. He helped bridge the gap when the 'round-the-world schooner *Yankee* lost contact with the U. S. East Coast in the Java Sea and Indian Ocean on a prewar cruise. DU1FM wonders if Alan Eurich, operator aboard *Yankee* at that time, is still brass-pounding." Hmm — we last recall Al as W7HFZ immediately prior to WW-II. . _ . _ . _ Further anent hurricane-hit ZK2AB's rehabilitation via W6ZEN. Charles writes to thank all who assisted in his recovery from his bout with the elements. Hamwise, all goes quite well: "ZL1PA has my Eddystone 750 at the moment and is busily rejuvenating it. I hope to put my transmitter back to its 100-watt level — 65 is the best it will take right now. And if the s.s.b. bug bites me as it seems to be doing to many, you can look for me in the pen with all the other ducks. I'm on 20 at the moment with a BC-348 and I hope to add a 15-meter converter before long. . . . Offers of assistance came from many different people in widely different circumstances and the majority of them I have never had the opportunity of QSOing. In at least one case I received assistance from one who I feel is probably in more straitened circumstances than I am, but because he had gone through a hurricane himself and had likewise been the recipient of ham generosity he felt compelled to help me. I find it very difficult to adequately thank such people as this. I have puzzled long and often over the connection between amateur radio and such spontaneous generosity and have come up with no real answer. I simply conclude that the people concerned were kindhearted in the first place and that amateur radio has served to foster and extend that generosity. I extend my deepest gratitude to W1s MV UQP WDD, W2HTI, W3s RNQ YHQ, W4s IFN UK, W5UX, W6s JKJ UOU ZEN, K6HYY, W9WHM, WØNL and KØGZN. Due to the distance that separates me from America I will not be up to date with the names and calls of all fellows w ho have contributed to my welfare, so I also thank very sincerely the many others who offered assistance and whose calls unfortunately are not included in the preceding."

Hereabouts — W3AYD assists AARC (Aruba) in publicizing the WANA (Worked All Netherlands Antilles) certification now available world wide. Briefly, the wallpaper can be earned by DXers who confirm contacts with ten different stations on Aruba, five on Curacao, one on Bonaire, and one on either Saba, Sint Maarten or Sint Eustastius — phone, c.w., s.s.b. or combined modes, all QSOs to date after January 1, 1959. Full revised rules are available at Aruba Amateur Radio Club, P.O. Box 43, Seroe Colorado, Aruba, N. A. . _ . _ . _ VA-JF, the Jamestown Festival Award, still is offered by the Richmond Amateur Radio Club to those who can prove they scored 25 QSOs with Virginia in 1957. Non-W/K/VEs need submit only fifteen QSLs plus a list of the other ten contacts. Going, *going* — check with W4JUJ for further scoop . _ . _ . _ Ex-W3DDV, now K1LST, bumped into a hotbed of Connecticut DX competition at the hands of K1s BEB CCA CJV EFI and IJF . _ . _ . _ Those gals are still moving in, men. W6KG mentions WA2AJJ in connection with FP8YL

(*Continued on page 144*)

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W2AVA

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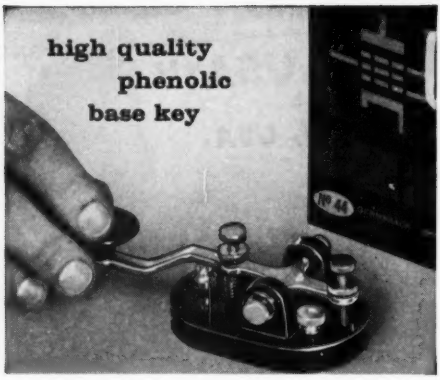

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emanations . . . . . K1IFJ reports OA4FA back at the dials after an enjoyable jaunt to N. Y. C. . . . . Nicaraguan stand-by YN4CB soon will be signing a TG call, according to W4IMG . . . . . KP4AOO is all set to file for WAS except for the confirmational tardiness of certain colleagues in Ark., Idaho, N. Mex., Utah and Vt. . . . . K2UYG finds W1JNE serving as chief switch-flipper at KG1FZ . . . . . W9FAU/VE1 regaled K4IGD and others this summer with P. E. I. QSOs on 20 c.w. . . . . W9NN enjoyed a September DX respite in the Wisconsin northland but was plagued by QRM nonetheless. Bob found a BC-band pile-up on his White Sox every time he tried to tune 'em in . . . . . CRAG (Guatemala) sponsored a lively DX test in mid-September for Spanish-speaking phones only. *Car-ramba!* . . . . . K2PIC is about to clinch his "DXCC²" and avers, "Without a doubt this is one of the roughest 'awards' I have ever seen." . . . . . It's swell to hear W8YIN back in the pack after hospitalization. A new triband beam will help boost Mickey's 262/250 DX tally (140/126 via sideband) . . . . . Say, W3RZQ wants information on the 21-Mc. PX1AA he worked this April. W8IBX seeks the secret of securing CN2BK's QSL, and W9CCO is eager to ascertain the present whereabouts of VK9YT . . . . . The W9-DXCC gang's September set-to at Chicago's Sheraton featured a gala program wherein W9s DSO DYG EWC FDX FKC GIL GPI GRV HCR IU LNM QYW RBI RKP RNX UTV YFV and YSQ teamed up to tackle various DX topics and problems of the day. W9RBI, abetted by W9s FKC GIL and IU, spearheaded the get-together's groundwork.

Ten Years Ago in "How's DX?" — We kick around that old two-way *vs.* half-way radiotelephone QSO/QSL chestnut once more in the leadoff chunk of your November 1949 column . . . . . The 7-Mc. gang fusses over FP8AA (W3BXE), HC7KD, HZ1KE, JA3AA, KA7RZ, KP6AE, KV4AA, UA0s FB FP and VP5BE of the Caymans . . . . . Pile-up pressures on 20 c.w. batter AC4YN, C8RR, EK4AO, FI8AK, HZ1LD, I1BCB/Trieste, LI2B, MD8 2GO 4GC 7GR 7MR, MI3s FG GH, PKs 2ZZ 3JF 3ST, TA3s AA FAS GVU, VK1FE, VR4AA, VSs 7AD 7BJ 7CC 9AL, wandering Ws 2WMV/C3 6ATB/KC6 6CRE/KC6, YK1AB and ZC6BU . . . . . Phone fare on 14 Mc.: AP2N, AR8BC, CR5s AI UP, F9QU/FM8, FM8AA, HL1BJ, HS1SS, LX1DC, LZ1ID, M1B, MF2AC, MI3SI, MP4s BAC BAD, PKs 5RU 6NQ, SP1KAB, TA3BS, VK1s ADS VU, VQ8AF, YJ1AA, YK1AC, ZC1AL, ZM6AF and ZS9F . . . . . Ten's phone fascinators include AR8AB, ET3AF, MI3AB, MT2FU, PJ5KO, PKs 4DA 5HL, ZSs 5GM/7 and 9J . . . . . Oddments and endments: The Third All-European DX Competition is announced, CAV (Czechoslovakia) sponsoring. . . . JA2KG, leading Yank-in-Japan DXer, knocks off for return Stateside at the 162-worked mark. . . . VQ2DH recounts his 7-day 212-QSO DX session as ZD6DH . . . . . Jeeves jauntily warms his coffee on the final, while photos of DXCCer DL4TL (W9QDL), I8Is AFM AYN and FIC complete the documentary.

World Above 50 Mc.

(*Continued from page 63*)

well as the low end, when using c.w.

K1AII, Plymouth, Mass. — Am doing a lot of c.w. calling on 145.01 Mc., but find few takers. How about low-end c.w. operators tuning the *second* megacycle, too? Am interested in extended-range c.w. skeds.

W1LMZ, Concord, Mass. — Eastern Massachusetts 2-Meter Net going strong on 145.8 Mc. Mondays and Fridays at 2000.

K4EUS, Chester, Va. — Running nightly skeds with W4RMU, Jacksonville, Fla., and CO2VY, Havana. Latter calls 5-minute CQ at 2050 on 144.6 Mc., c.w. W4RMU calls in northerly direction at 2100. Heard him solidly Aug. 26.

W4FNR, Ft. Lauderdale, Fla. — Sporadic-*E* skip held remarkably well through August. KP4 total now up to 21. Worked TG9JW Aug. 12. Working W4RMU regularly (300 miles) since installation of 7-element 23-foot Yagi. Often hear two separate signals from him, apparently ionospheric and tropospheric in nature.

W4FWH, Doraville, Ga. — Six-meter activity more than doubled in Atlanta area in past year. Anticipated increase above 145 Mc. not yet materialized.

K4KYL, Knoxville, Tenn. — Sporadic-*E* skip observed on 50 Mc. 16 days in August, an unusual amount for this late in the season. Technician activity above 145 Mc. increasing.

W4LTU, Springfield, Va. — Completed 10,000-Mc. gear using modified 2K25s. Monitoring 49.72-Mc. signal from Havana, Ill., for meteors, *E*, and aurora. Recording earth currents and comparing with aurora evidence on 49.72.

W4RMU, Jacksonville, Fla. — Sporadic-*E* activity un-

(*Continued on page 146*)

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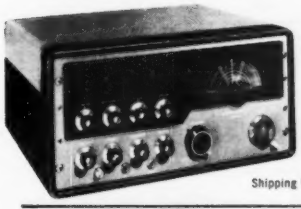

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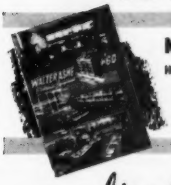

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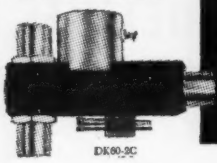

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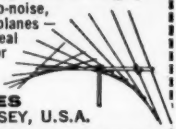

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usually high during August. Made several contacts via *E* skip with 0.6-watt input, some with 89 reports on voice. Also am able to work out to 100 miles or so with this flea-power setup on c.w. Early-morning skeds on 144 Mc. with W1 and 2 show up numerous periods of 15 seconds or more of signal. Not all these sound like meteor bursts, making one wonder if there is such a thing as short-term tropospheric propagation. Signals occasionally last for a minute or more.

K6OKK, Vallejo, Cal. — Working on 2300-Mc. gear with W6OKR.

W6OYM, Sherman Oaks, Cal. — Monitoring 50 Mc. for stellar noises. 5-element beam and sensitive preamplifier enable one to detect changes in noise from different parts of the universe.

W7MAH, Reno, Nev. — Worked W7FGG, Tucson, Ariz., on 144 Mc. during August Perseids. Heard WØIC, but no QSO. Still running daily skeds with W6GDO in Sacramento, checking polarization. Horizontal seems to provide lower noise level and more consistent signal.

W9GAB, Beloit, Wis. — Experimenting with parametric amplifiers on 432 Mc. First attempt, similar to the one described by W6AJF in August *QST*, works very well. Will try installation at the antenna. Am hearing signals from the southeast, probably Chicago area, but modulation is too weak to copy.

K9MLI, Winnetka, Ill. — Comparisons of vertical whip and halo in 50-Mc. mobile work show that skip signals often are better on the whip. Local signals, when horizontally polarized, are better on the halo, though cross-polarization effects are not as bad as anticipated.

K9PGK, Indianapolis, Ind. — Rapidly increasing activity on 50 Mc. Estimate between 250 and 300 stations locally. Two-meter occupancy also rising rapidly since Aug. 21.

K9RRS, Racine, Wis. — Would like to set up s.s.b. net on 50 Mc. Have worked only one other s.s.b. station on 6 thus far.

Correspondence

(*Continued from page 71*)

He says, in his last paragraph:

"Last, but perhaps most important, take out extended coverage insurance. This is not expensive and will cover any unexpected damages to person or property."

Sorry, but this is just not true and, if relied upon, could cause some unlucky ham a severe financial loss. The extended coverage endorsement to a fire policy insures against certain specified perils only, of which only windstorm and hail have any real meaning in this situation. In the case of an apartment dweller who does not own the building it would cover only the antenna. Moreover, in many states the antenna would not be covered for windstorm and hail unless specifically declared and additional premium paid. Most important of all, extended coverage insurance does not cover injuries to persons under any circumstances. In other words, instead of covering "any unexpected damages to person or property" it actually provides limited coverage — essentially windstorm and hail — on the antenna only and then, in many states, only when specifically arranged. . . .

The do-it-yourself approach to insurance is risky. Better get it wired and tested.

— *William H. Moloney, W9GRV*

OVERSIZE QSL'S

15608-53rd Ave., S.
Seattle, Washington

Editor, *QST:*

Recently I received a notice there was a card with one cent postage due to be picked up at the post office. Upon claiming the card it turned out to be a large size QSL card with a three cent stamp properly affixed. After questioning the clerk as to why the one cent was due I was told that the card was beyond the dimensional limits of what three cents would cover.

I thought it would be well to pass on this information relative to post card rates to caution those hams planning cards to keep within the regulation size in order to assure de-

(*Continued on page 148*)

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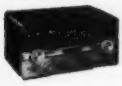

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Covers 540Kc-30Mc., Logging scale for 10-80 meter, separate RF and AF gain controls, noise limiter, AVC control, BFO, pitch control, rec/standby, self contained speaker.

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NEW!

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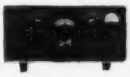
less speaker **$169.50**



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Band switching, 160-10 meters, 350w CW, 275w AM, 400w SSB (P.E.P.), w/ external exciter, VFO, push to talk, antenna changeover relay, final tubes blower cooled—Pi network output, high level class B modulation, new audio compression circuit, maximum TVI suppression.

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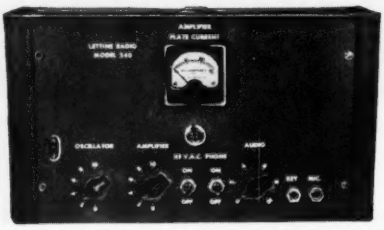

MOD. 240 WITH MOBILE CONNECTIONS & AC SUPPLY 1.6 to 30 mc. with plug-in coils. For Phone & CW, Novice, General, CAP, Industrial. Complete with 8 x 14 x 8 cabinet, tubes, 40 meter coils & crystal. Wt. 30 lbs. **$79.95**
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VFO **$49.95**

Send full amount or $25 with order — balance C.O.D.

LETTINE RADIO MFG. CO.

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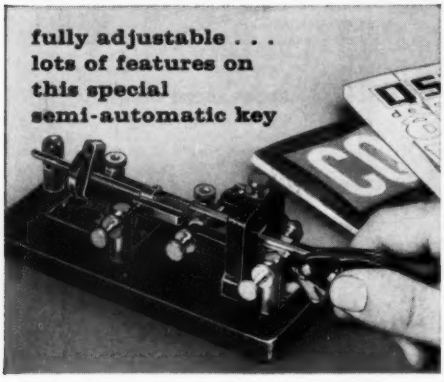

This attractively finished semi-automatic key has many operating features. All hardware and vibrator are heavily chrome plated. Vibrator is the same unit as used on more expensive, deluxe model Johnson keys. Easy action—adjustable from the lowest to the highest speeds. Furnished complete with ⅛" coin silver contacts, circuit closing switch, and rubber mounting feet.

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— Marion A. Metz, W7BJG

BAH!

Box 907
Ste. Rose de Laval, Que.

Editor, *QST*:

Yes, indeed, a well expressed "Bah" can be a work of art. Unfortunately that of W2TOX (on page 71 of September *QST*) is not. This lamentable "baaaaaah", this attempt to discredit a sport enjoyed by tens of thousands, does not deserve the prominent place it has been given.

In our simple fashion we started out to deal reasonably with the case built up against DX men. One can hardly make a case against DX itself for that is an inescapable fact. After a short spell, during which our antics resembled an inebriate pursuing a top hat in a high wind, we realized that there was no case to demolish. All that this outburst reveals is a petulant barrage of prejudice. Perhaps this is just a case of a wounded ego retiring from the fury of a 20-meter pileup, or a frustrated v.h.f. man who has never exceeded the line of sight.

So W2TOX is "part of a seething mass of QRM". So are we. How else could it be when you apply some sensible thought to the vital statistics and the geographical facts? Although it has been like this for years and years, it had somehow escaped his notice. It is no argument against the sport that it is difficult and competitive; in fact this seething mass of QRM is part of the challenge. There is no doubt that efforts to overcome it have produced the most significant changes in amateur equipment design over the years.

Our critic does not hold with the "brief encounter" type of contact in his radio work and tries to make a virtue of garrulousness. We wonder how he would conduct himself at a public function: would a mere shake of the hand from the guest of honor be sufficient or must he pursue his notion that every acquaintance is for nought unless it is fully ripened to a worthwhile friendship? What a burden such a man carries. Isn't there anyone he can just say "hello" to? If one has DX contacts, there is as much opportunity to make our friends there as anywhere else. We can be sure that the majority of DX men enjoy many contacts of the type that W2TOX considers most desirable. Surely though, it is unreasonable to expect them all to be like this. . . .

The license we take so much trouble to get is for transmitting privileges. Many, let us hope very many, licensed amateurs are experimenters and builders, but to be only an experimenter and builder it is not necessary to be a licensed amateur. Communications is the backbone of our hobby. Without communication the efforts being presently made for Amateur Radio at Geneva would be pointless. None of us is in complete approval of all the things we hear on the DX bands, but improvements are not brought about by letters such as W2TOX has written.

No matter how many discussions like this rage throughout the years, no matter how the rules are changed, if hams are able to communicate with each other, one thing is sure: there will be DX and there will be operators who will aspire to it. Thank goodness for that.

— Ernie Welling, VE2YU

60 Cosey Beach Avenue
East Haven 12, Conn.

Editor, *QST*:

I wholeheartedly believe that congratulations are due to Mr. Clements, W2TOX. I agree 100% with his comments in "How's DX?" Despite rather feeble comments made by the editor, Mr. Clements has what I feel the true concept of amateur radio . . .

— Jim Monahan, K1BNQ

GREAT BALLS O' FIRE

Box 17
Winterhaven, Calif.

Editor, *QST*:

Regarding the letter from W3SUR, August *QST*. . . . . 10 kw might not be so good. I imagine it would be rather unnerving to look out the window and see a huge ball of r.f. floating toward the shack.

— Vern D. Wall, WV6HOY

(Continued on page 150)

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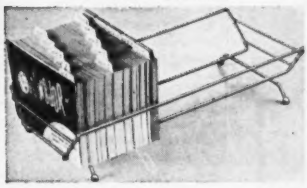

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Special Price $1.95

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As featured in Nov. 1956 QST. Complete with B & W 3013 Miniductor. Only 8 ft. long for 10 meters. Wt. 5 lbs.

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Transcon TNS. 6AL5 and 12AX7 tubes. DC power input: 150 V. DC to 225 V. DC Filament: 6 or 12 V. Adjustable squelch control. Size: 2¼" x 2½" x 4." **$14.95**

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CENTIMEG GUARANTEES:

- 10 db S+N/N for 0.5 mv., 30% modulated signal
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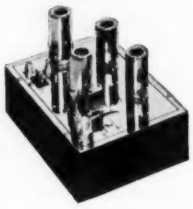

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MODEL
A12/600/200
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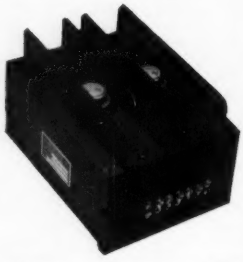

This transistor 12V dc power converter is rated for continuous power of 120 watts at 600 and 300 volts at temperatures up to 105°F without additional cooling.

High efficiency, small size, and light weight, plus freedom from maintenance, conserve your battery and increase the enjoyment of mobile operation.

A companion unit Model A12/300/100, delivering 30 watts at 300 and 150 volts is available at a cost of **$49.50.**

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BELLEVILLE, NEW JERSEY

AGAIN?

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Seattle 15, Washington

Editor, *QST:*

The last time I sent in a suggestion to *QST*, it was hooted down so badly that I have hesitated to open my big mouth. However, since that time I have gained courage, so here goes again.

I have been wondering for DXCC purposes why it would not be a good idea to consider continental U.S. as forty-eight separate entities. For European hams this would be a decided break. It need not hold for U.S. hams. Europe is crowded with little countries, some of them not as far apart as some of our states . . .

Another thing that bothers me is this: why do some hams figure that because their contact has a two-letter call, they can immediately take all weights off their bugs and send like mad? Personally I prefer a comfortable 16 to 20 words a minute, not 45 w.p.m.

— *G. W. Fitzpatrick, W7VX*

CD SUCCESS STORY

P. O. Box 137
Martinsville, New Jersey

Editor, *QST:*

Many thanks to all the gang in ARRL particularly for RACES. The true ham's reward is in the personal satisfaction he gets out of being able to help those who are in need of his special talents and knowledge.

As Director of Civil Defense for the Township of Bridgewater, New Jersey, it became one of my duties to establish radio communications. We had absolutely nothing. There was no money or equipment. There was a disheartening lack of public interest, and the governing body took a rather dim view of the entire proceeding. To make everything worse, I had absolutely no knowledge of radio communications or the RACES program.

Inquiry at the State Capitol directed me to W2SJB, County Radio Officer, who explained RACES to me and was of tremendous assistance in getting me on the right track.

W2UM was the lone member of RACES in our community, but there was a job that really needed doing, and he was ready. His first problem was educating me: then we both went to work on our Township officials.

A small sum was allocated for the purchase of equipment — never before was a man able to acquire so much for so little.

Twenty-eight operators were trained by Paul, and a wonderful radio net has been established to serve our thirty-five square miles. Many of our operators, including myself, have become hams as a result of his teaching.

We now have ten 2-meter rigs and one 6-meter rig set up at scattered fixed locations, twenty privately-owned automobiles with antennas and wiring installed so any units can go mobile, and seven privately-licensed amateur stations in our group.

All this has been accomplished in less than five years! *QST* was our "bible". The AREC and RACES news were just the hammers needed to pound home our points to the municipal officials. The worth of radio was proven in *QST*.

RACES and Amateur Radio have lived up to their promises, and have proven their worth here many times. Our town is very proud of its c.d. radio crew, and I shall be eternally grateful to the ARRL for helping to make these things possible. Hams are wonderful people who go quietly about the business of performing miracles. I am tremendously proud to belong to the gang.

— *Leon C. Guinaud, WA2BKH*

Strays

Is anyone using a Heathkit SB-10 with a Johnson Viking Valiant? We have received quite a few inquiries here at ARRL headquarters from people who would like to use the units together. If you have information, we would appreciate your sending it in for possible use in *QST*.

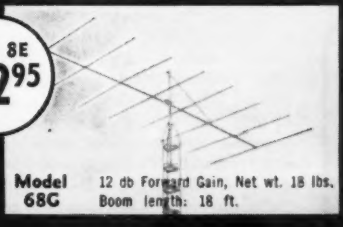
here are hy-gain's 6 METER ARRAYS from ARROW

These Hy-Gain VHF Antennas are OPTIMUM SPACED for maximum forward gain. Parasitic elements are constructed from eighth inch 6061T6 alloy aluminum rod for high Q resulting in tremendous efficiency. The booms are 3/4" heavy wall aluminum tubing. All hardware is hot dipped galvanized & irridite treated for maximum weather ability. Extremely easy to put up and into operation these beams may be stacked for additional gain. Instructions for constructing coax harness for stacking 6M beams included in manual.

6M, 5E
$18.95

Model 65G — 9 db Forward Gain, Net wt. 9 lbs. Boom length: 9 ft.

6M, 8E
$32.95



Model 68G — 12 db Forward Gain, Net wt. 18 lbs. Boom length: 18 ft.

New pre-calibrated (GAMMAXIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed included.

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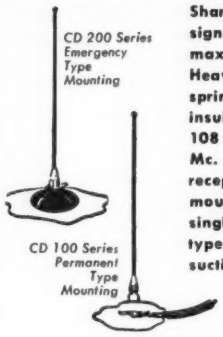

Sharpen all UHF radio signal reception with Premax Car-Top Antennas. Heavily plated, tempered spring steel with well-insulated mountings for 108 to 120 Mc., 144 Mc. and 152 to 162 Mc. reception. Permanent type mounts easily through a single hole. Emergency type attaches with single suction cup fitting.

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West Hartford 7, Connecticut

Happenings of the Month

(*Continued from page 49*)

4 or its major subcommittees. Problems arising from differences in the various countries' proposals have been assigned to working groups, and in one case — covering frequencies from 4 to 27 Mc. — to a four-power *ad hoc* committee comprising the U. S., the U.S.S.R., Ethiopia, and the Netherlands. This committee represents four viewpoints regarding changes in allocations for 4-27 Mc., especially additional space for international broadcasting: the U. S. representing the group desiring no changes at all in this portion of the spectrum; the U.S.S.R., those who feel the need of more space for the h.f. broadcasting service; Ethiopia, speaking for the smaller and newer nations, who feel that they do not have an appropriate share of the available broadcasting frequencies; and the Netherlands, those who do not want wholesale changes but desire minor adjustments, mainly additional broadcasting frequencies.

On its main problem, the *ad hoc* group came to no conclusions. Its report asked for a clarification of some terms by other Committees, and there were discussions of changes in allocations which touched on our bands but, in the main, the committee left the basic questions unsolved. However, there was unanimous agreement in the *ad hoc* Committee on a compromise solution to problems relating to the 7,000–7,300 kc. band. In Region II (the Americas) the entire band would remain exclusively amateur, while in the rest of the world the sharing arrangement presently in force from 7100 to 7150 (and in some cases 7100–7200) would be abolished. This would leave 7000–7100 exclusively amateur world wide (as it now is) 7100–7300 exclusively amateur in Region II only, and 7100–7300 exclusively broadcasting outside the western hemisphere.

As regards our other bands, no clear trend has yet emerged from the discussions. A further report from Geneva will appear in this column next month.

EXTRA CLASS INQUIRY

The League has filed comments in Docket 12912 in accordance with a mail vote of the Board as follows:

Federal Communications Commission

In the Matter of An Inquiry into the Status of the Extra Class Amateur Radio License set forth in Part 12 of the Commission's Rules	Docket No. 12912

STATEMENT

The American Radio Relay League, Inc., has made numerous extensive studies in recent years concerning an incentive program of amateur licensing and the place of the Amateur Extra Class license in such a program. However, the League has been unable to evolve practical solutions, except those which have been rejected by the Commission.

Respectfully submitted,
The American Radio Relay League, Inc.
PAUL M. SEGAL
Its General Counsel

A. L. BUDLONG
General Manager
September 15, 1959

(*Continued on page 154*)

Your Ham Headquarters – WASHINGTON to FLORIDA

WE GIVE HIGH TRADES ON YOUR PRESENT EQUIPMENT

IN STOCK NOW

HAMMARLUND HQ-170 HAM BANDS ONLY

Another great new receiver from Hammarlund—an outstanding SSB amateur receiver offering the best features of the finest SSB converters and hottest amateur receivers —all wrapped up in a single, beautiful superheterodyne receiver.

- 17-tube superheterodyne
- Dual and triple conversion
- 6, 10, 15, 20, 40, 80, and 160-meter amateur bands
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A brand-new star performer for amateur and general use. Dual conversion 13-tube superheterodyne circuit. 540 KCS to 31 MCS. Electrical bandspread. Q-Multiplier. Adjustable notch filter up to 60 db attenuation. Separate stabilized BFO. Crystal calibrator. Automatic noise limiter. 14 tuned IF circuits. Crystal-controlled 2nd conversion.

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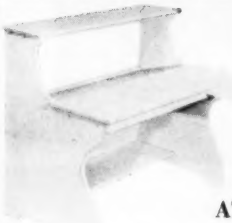
HAM OPERATING DESK KIT



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Now a complete operating desk with tilt-back equipment shelf for easy dial and meter reading, slide-out typewriter panel and two extra shelves, top and bottom. Ample housing for any station with plenty of storage space and elbow room for writing and operating. Constructed of smooth uniformly surfaced ¾" Particle Board for appearance, durability and strength. Particle Board leaves no ugly edges and takes any kind of finish. Varnish it — shellac it — stain it (for living room use) — paint it. Leave it as it is. Truly a desk that will complement any station in any room of the house. Assembles easily in minutes using screwdriver alone. Complete with step-by-step instructions, and hardware. Overall dimensions 30¾" deep, 42" high, 48" long. Shppg. wt. 90 lbs. Shipped expressor motor freight collect. Orders promptly filled.

As seen in Sept. '59 QST, p. 87 **WRITE FOR FREE LITERATURE**
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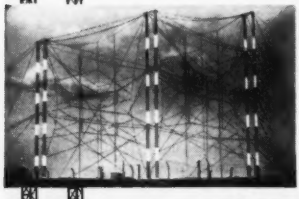
FIRST SUCCESSFUL Broadband CURTAIN ANTENNA



Designed, built and installed by Trylon, these two broadsides give 5% to 10% more reliable long-distance communications than comparable rhombics — and with a bandwidth of ±15% of center frequency at 1.5 VSWR.

WIND TURBINE COMPANY, West Chester, Pa.
In Canada: The Wind Turbine Company of Canada, Ltd., Toronto 9.

FAIRBANKS GETS FCC EXAMS

Effective November 1, 1959, Fairbanks, Alaska, is added to the list of points at which the FCC will conduct annual examinations for commercial and amateur radio operator licenses. Information on the exact date and place of such exams may be obtained from the District FCC Engineer-in-Charge, Room 53, U. S. Post Office Building, Anchorage, Alaska.

MINUTES OF EXECUTIVE COMMITTEE MEETING

No. 270

September 28, 1959

Pursuant to due notice, the Executive Committee of The American Radio Relay League, Inc. met in West Hartford, Connecticut, at 10:07 A.M., September 28, 1959. Present: President Goodwin L. Dosland, in the chair; Vice-President Percy C. Noble; Vice-President F. E. Handy; Director Milton E. Chaffee; Director John G. Doyle; Director Morton B. Kahn; Treasurer David H. Houghton. Assistant Secretary Perry Williams was also present.

The Committee proceeded to examine nominations in the director elections. The Committee made findings and ordered actions as detailed below, all by unanimous action. The views of First Vice-President W. M. Groves, expressed by telegram, were in concurrence.

ATLANTIC DIVISION

For Director:

Gilbert L. Crossley, W3YA/W3DKN, and John W. Gore, W3PRL, were found lawfully nominated and eligible, and their names ordered listed on ballots to be sent to Full Members of the Division.

For Vice-Director:

Phil D. Boardman, W3LEZ, and Edwin S. Van Deusen, W3ECP, were found lawfully nominated and eligible, and their names ordered listed on ballots to be sent to Full Members of the Division.

CANADIAN DIVISION

For Director:

Alex Reid, VE2BE, was found lawfully nominated and eligible. Being the only eligible nominee he was thereupon declared, pursuant to the By-Laws, to be duly re-elected as Director of the Canadian Division for the 1960–1961 term without membership balloting.

For Vice-Director:

Noel B. Eaton, VE3CJ, and William R. Savage, VE6EO were found lawfully nominated and eligible, and their names ordered listed on ballots to be sent to Full Members of the Division.

DAKOTA DIVISION

For Director:

Alfred M. Gowan, WØPHR, was found lawfully nominated and eligible; however, the Committee was in receipt of a letter from Mr. Gowan withdrawing as a candidate. Charles G. Compton, WØBUO, was found lawfully nominated and eligible. Being the only eligible nominee, he was thereupon declared, pursuant to the By-Laws, to be duly elected as Director of the Dakota Division for the 1960–1961 term without membership balloting.

For Vice-Director:

Charles G. Compton, WØBUO, was nominated for Vice-Director, but his candidacy for Director takes precedence in accordance with By-Law 17. Martha J. Shirley, WØZWL, was found lawfully nominated and eligible. Being the only eligible nominee, she was thereupon declared, pursuant to the By-Laws, to be duly elected as Vice-Director of the Dakota Division for the 1960–1961 term without membership balloting.

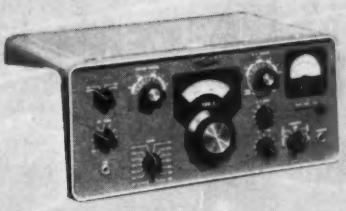
DELTA DIVISION

For Director:

William G. Davaul, W5FQX, and Sanford B. DeHart, W4RRV, were found lawfully nominated and eligible, and

(*Continued on page 156*)

The Collins KWM-2



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Strong, lightweight aluminum construction features exclusive design . . . outer tower sections crank-up first permitting safe, guy-as-you-go procedure.

"GUY AS YOU GO"

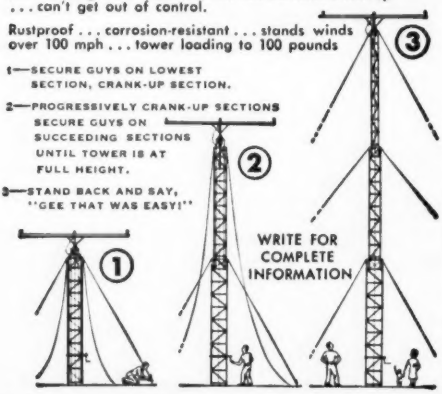
Raise or lower the tower as needed . . . protect against sudden adverse weather . . . also adjust antenna without climbing tower. Each section has automatic lock-up . . . can't get out of control.

Rustproof . . . corrosion-resistant . . . stands winds over 100 mph . . . tower loading to 100 pounds

1—SECURE GUYS ON LOWEST SECTION, CRANK-UP SECTION.

2—PROGRESSIVELY CRANK-UP SECTIONS SECURE GUYS ON SUCCEEDING SECTIONS UNTIL TOWER IS AT FULL HEIGHT.

3—STAND BACK AND SAY, "GEE THAT WAS EASY!"



M-4620 Tower, 56′ with winch and feet . . 249.00 fob factory.

ROTATOR PLATE . TOP PLATE . THRUST BEARING . 500′ GUY WIRE 45.00 fob factory.

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114-450..Practice Set, complete.....	$4.90
114-400..Buzzer only, as used on set above.....	1.85

WRITE TODAY—*Complete information on all Johnson keys, sounders, and practice sets — yours on request.*

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their names ordered listed on ballots to be sent to Full Members of the Division.

For Vice-Director

B. S. McDougal, W5BX, was found lawfully nominated, but ineligible due to lack of the required membership continuity. Victor Canfield, W5BSR, was found lawfully nominated and eligible. Being the only eligible nominee, he was thereupon declared, pursuant to the By-Laws, to be duly elected as Vice-Director of the Delta Division for the 1960–1961 term without membership balloting.

GREAT LAKES DIVISION

For Director:

Lester M. Klentz, W8KJE, was founded lawfully nominated, but ineligible due to lack of the required membership continuity. Dana E. Cartwright, W8UPB, and Ralph C. Charbeneau, W8OLJ, were found lawfully nominated and eligible, and their names ordered listed on ballots to be sent to Full Members of the Division.

For Vice-Director:

Richard L. Alexander, W8TWO, and Robert B. Cooper, W8AQA, were found lawfully nominated and eligible, and their names ordered listed on ballots to be sent to Full Members of the Division.

MIDWEST DIVISION

For Director:

H. Glenn Lipscomb, WØHUI, was found lawfully nominated; however, the Committee was in receipt of a letter from Mr. Lipscomb withdrawing as a candidate. Robert W. Denniston, WØNWX, was found lawfully nominated and eligible. Being the only eligible nominee, he was thereupon declared, pursuant to the By-Laws, to be duly re-elected as Director of the Midwest Division for the 1960–1961 term without membership balloting.

For Vice-Director:

Sumner H. Foster, WØGQ, was found lawfully nominated and eligible. Being the only eligible nominee, he was thereupon declared, pursuant to the By-Laws, to be duly re-elected as Vice-Director of the Midwest Division for the 1960–1961 term without membership balloting.

PACIFIC DIVISION

For Director:

Larry M. Reed, W6CTH, was found lawfully nominated, but ineligible due to lack of the required membership continuity. Harry M. Engwicht, W6HC, was found lawfully nominated and eligible. Being the only eligible nominee, he was thereupon declared, pursuant to the By-Laws, to be duly re-elected as Director of the Pacific Division for the 1960–1961 term without membership balloting.

For Vice-Director:

Ronald G. Martin, W6ZF, was found lawfully nominated and eligible. Being the only eligible nominee, he was thereupon declared, pursuant to the By-Laws, to be duly re-elected as Vice-Director of the Pacific Division for the 1960–1961 term without membership balloting.

SOUTHEASTERN DIVISION

For Director:

James P. Born, Jr., W4ZD, was found lawfully nominated and eligible. Being the only eligible nominee, he was thereupon declared, pursuant to the By-Laws, to be duly re-elected as Director of the Southeastern Division for the 1960–1961 term without membership balloting.

For Vice-Director:

Clarence J. White, Jr., W4KR, was found lawfully nominated, but ineligible due to lack of the required membership continuity. Arthur H. Benzee, W4FE, and Thomas M. Moss, W4HYW, were found lawfully nominated and eligible, and their names ordered listed on ballots to be sent to Full Members of the Division.

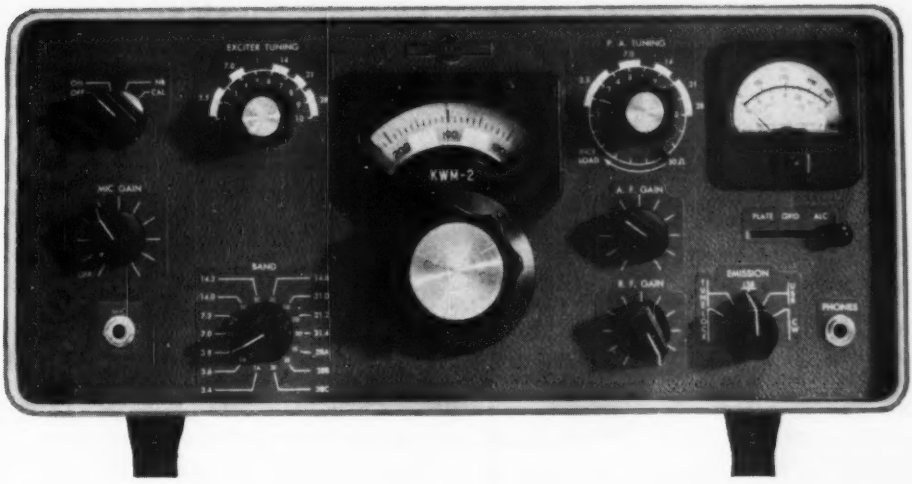
On motion of Mr. Noble, unanimously VOTED that Messrs. Kahn, Chaffee, and Doyle, with Messrs. Handy, Noble and Houghton as alternates, be appointed a committee of tellers to count the ballots in the current Director elections, under the terms of the By-Laws.

At the request of Mr. Kahn, the Executive Committee reviewed DXCC, its operations and regulations, and ap-

(*Continued on page 158*)

MOBILE SINGLE SIDEBAND WITH THE NEW 80-10 METER

COLLINS KWM-2 TRANSCEIVER



Use it as a mobile unit. Use it as a fixed station. No modification necessary. The Collins KWM-2 has all the lightweight concepts of modern style, mobility and versatility in Single Sideband Amateur Radio.

Operation is on all bands between 3.4 mc and 29.7 mc. 175 watt PEP input on SSB or 160 watts on CW. Frequency determining components assure exact coincidence of transmitted and received signals. Exceptional frequency stability, readability and advanced SSB generation are comparable to the KWM-1 and the famous Collins S/Line. The use of common components in both transmitting and receiving functions saves space and costs.

The KWM-2 weighs only 18 lbs. 3 oz., measures 7¾" x 14¾" x 13¼".

Now's the time to place your order, and get on the air with the new Collins KWM-2 80-10 meter mobile Transceiver.

Net price, only $1095.00 (power supply and accessories extra).

Buy your Collins equipment on our time payment plan. Trade in allowances will probably handle the down payment. Contact us now for complete information.

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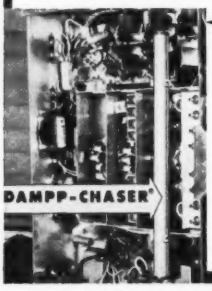

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Input Ceramic Grid
Tank for 80–40–20–
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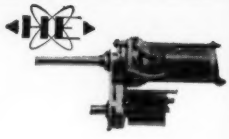
GP-20L—**$7.95**



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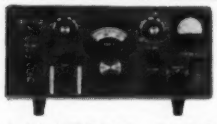
GP-20 (No link, interstage or pi-net plate) $6.95
GP-50 100 AM, 150 watt SSB/CW—$13.95
GP-25L Push-pull model with link input—$14.95

HARRINGTON ELECTRONICS Box 189 Topsfield, Mass.



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Steve W9EAN

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Also see Collins KWM-2 at Harris Radio Corporation Fond du Lac, Wisconsin on Fri. 7–9, Sat. 9–3

Terry W9DIA

proved the new advisory Form CD-144. The Committee also expressed its approval of the DXCC rules and administrative policies.

Following this discussion, the Committee was in recess for lunch from 12:30 to 2:00 P.M.

There was extended discussion on *QST* advertising policies. Upon motion of Mr. Doyle, unanimously VOTED that the following resolution be presented to the Board of Directors for mail vote, in accordance with the provisions of Article 7 of the Articles of Association:

"It is the feeling of the Board that Citizens Band equipment advertising falls into a market which does not offer the greatest potential for purchase of this equipment.

"Since Citizens Band equipment should not be confused with amateur radio, it shall be our policy, in the best interest of the manufacturers as well as amateurs, that such advertising in *QST* should be discouraged."

Mr. Chaffee, as Chairman of the Finance Committee, and Treasurer Houghton reported on the results of the investment of operating funds in short-term government bills. Mr. Chaffee reported that some $700 in interest will be earned during the short period of our investment in these notes. The Executive Committee expressed its desire to continue this type of investment as permanent policy.

During the course of the Executive Committee Meeting, a telephone conference was held with Assistant General Manager Huntoon in Geneva, and he reported that the Conference was moving rather slowly, but as well as could be expected at this time.

The Executive Committee discussed expanded coverage of various amateur activities in *QST*. It was agreed that the staff is doing an excellent job with *QST*, but some suggestions were presented informally for staff consideration.

There was also extensive review of the self-policing system of the amateur bands, standards of conduct connected with personal observance of all regulations, and the work of the Field Engineering and Monitoring Division of the FCC.

On motion of Mr. Doyle, affiliation was unanimously GRANTED to the following societies:

Douglas-El Segundo Amateur Radio Club, Hawthorne, Calif.
El Cajon Valley High School Amateur Radio Club, El Cajon, Calif.
Mamaroneck High School Radio Club, Mamaroneck, N. Y.
Minot Amateur Radio Assceiation, Minot, No. Dakota
Opelika Amateur Radio Club, Opelika, Alabama
Orleans County Amateur Radio Club, Albion, New York
R. F. Amateur Radio Club, Redwood Falls, Minn.
The Royal Order of the Left Foot, Stevens Point, Wis.
San Diego DX Club, San Diego, Calif.
Somerset County Amateur Radio Club, Somerset, Penn.
Tri-State Amateur Radio Club, Inc., Bristol, Tenn.
Tube & Shutter Club, Cresco, Iowa
Windom Amateur Radio Society, Windom, Minn.

There being no further business, the Committee adjourned at 5:47 P.M.

PERRY F. WILLIAMS
Assistant Secretary

Strays

Ahhhh Sideband Ahhhhh

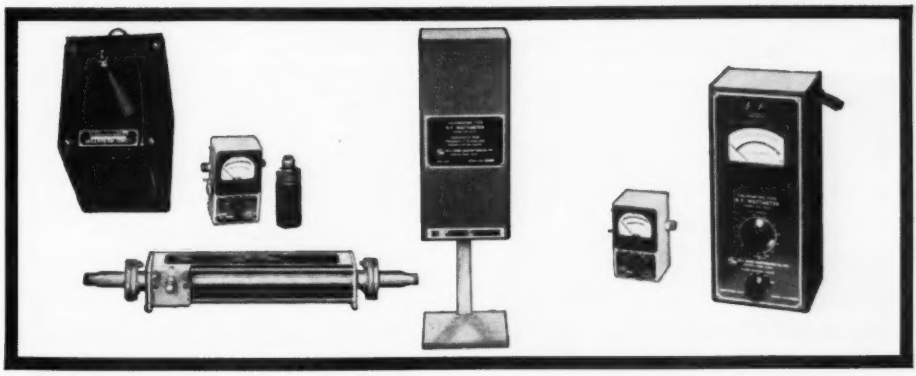
(A Recorded S.S.B. QSO)

Ahhh thanks for the call ahhhhh Joe.
Ahhh sure pleased to meet you ahhh om.
Ahhh thanks for the fb ahhh report.
Ahhh glad the new ahhh rig's getting out.
Ahhh QTH here is near ahhh Washington.
Ahhh name is ahhh ahhh Abraham.
Ahhh just recently went on ahhh sideband.
Ahhh having difficulty learning ahhh lingo.
Ahhh made several ahhh tape recordings.
Ahhh forced to conclude some ahhh techniques.
Ahhh make many s.s.b. ahhh amateurs.
Ahhh sound rather ahhhhhhhhhhhh stupid.

— *K6BX*

MicroMatch®

RF POWER STANDARDS LABORATORY



MICROMATCH equipment is used to establish a reference standard of RF power to an accuracy of better than 1% of absolute.

THE 64IN CALORIMETRIC WATTMETER establishes RF power reference of an accuracy of 1% of value read, and is used to calibrate other wattmeters. Five power scales, 0-3, 3-10, 10-30, 30-100, and 100-300 watts, are incorporated in the wattmeters for use in the 0-3000 mcs range.

711N and 712N FEED-THROUGH WATTMETERS, after comparison with the 64IN, can be used continuously as secondary standards and over the same frequency range as covered by the primary standard. The MODEL 711N is a multirange instrument covering power levels from 0 to 300 watts in three ranges, 0-30, 30-75, and 75-300 watts. MODEL 712N covers power levels of 0 to 10 watts in three switch positions, 0-2.5, 2.5-5, and 5-10 watts full scale.

636N and 603N RF LOAD RESISTORS absorb incident power during measurements. MODEL 636N is rated at 600 watts, and MODEL 603N is rated at 20 watts. Both models perform satisfactorily over the entire frequency range to 3000 mcs. These loads, in conjunction with the MODELS 711N and 712N Feed-through Wattmeters, form excellent absorption type Wattmeters.

152N COAXIAL TUNER is used to decrease to 1.000 the residual VSWR in a load. The tuner is rated at 100 watts, and its frequency range is 500-4000 mcs.

For more information on Tuners, Directional Couplers, R. F. Loads, etc., write

M.C. Jones

M. C. JONES ELECTRONICS CO., INC.

185 N. MAIN STREET, BRISTOL, CONN.

SUBSIDIARY OF

Bendix AVIATION CORPORATION

NO BEATING AROUND THE BUSH . . .

STRAIGHT TO THE POINT!

See Page 2

FREE

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It is easy and pleasant to learn or increase speed the modern way — with an **Instructograph Code Teacher.** Excellent for the beginner or advanced student. A quick, practical and dependable method. Available tapes from beginner's alphabet to typical messages on all subjects. Speed range 5 to 40 WPM. Always ready, no QRM, beats having someone send to you.

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GSB-100 SSB TRANSMITTER/EXCITER

GSB-100 499.50

SSB transmitter/exciter, band-switches 80-40-20-15-10 meters. Rated 100 watts P.E.P. Operates on SSB with selectable sidebands, also PM, AM and CW. Has pi network output. Uses quartz crystal notching filter to suppress carrier. Has stable VFO, excellent VOX, heavy-duty AC supply.

GSB-101 SSB LINEAR AMPLIFIER

GSB-101 459.50

1000 watts P.E.P., input linear uses stable, efficient grounded-grid circuitry. Has pi network output, switches 80-40-20-15-10 meter bands. Supplies for power and bias and antenna relay are built in. Linear drives by GSB-100 or other equipment that supplies 60-70 watts drive power.

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A beam that has—

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- 10 DB gain on 10 and 15
- Better than 20 DB F/B ratio
- Cast aluminum alloy end and center spiders
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- Very low angle of radiation
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- Pretuned reflector coils

The SKYLANE quad has all this and more too.

Write for FREE BROCHURE

SKYLANE PRODUCTS

406 Bon Air Tampa 10, Florida

Crystal Control

(*Continued from page 36*)

is the optimum setting for C_1 and it can be left at this setting, no further adjustments being required.

If you have a d.c. voltmeter, check the different voltages in the setup. Using the power supply shown here, the plate voltage on the 1625s is approximately 400 with the amplifier fully loaded. With the plate voltage on the oscillator and screen voltage on the 1625s adjusted to 250 volts (bleeder tap), the oscillator screen voltage is 160 volts. The oscillator takes approximately 30 ma. and the 1625 amplifier screens about 10 ma. when the amplifier is fully loaded.

Getting on the Air

To put the transmitter on the air it is necessary only to connect an antenna to the antenna post and connect a ground lead from the transmitter chassis to a water-pipe ground or to a metal stake driven in the ground. Almost any length of antenna will work, but for best results the minimum length should not be less than about ⅛ wavelength for the band in use. This is approximately 33 feet for 80 meters and 16 feet for 40 meters. You'll do better if you can make the antenna longer — and be sure to get the far end as high as possible.

An output indicator will prove to be a handy device for knowing when power is actually going into the antenna. For this purpose you can use a 6.3-volt, 150-ma. dial lamp. Connect two leads, each about one foot long, to the shell and base of the bulb, respectively. Clip one lead to the antenna post and the other lead on the antenna wire two feet from antenna post. A small amount of power will go through the bulb and this will provide a visual indication of output. Follow the same tuning procedure as outlined above for the dummy antenna. If the bulb gets so bright that it is in danger of burning out, move the leads closer together to reduce the pickup.

You may find that certain antenna lengths won't work — that is, the amplifier won't load — no matter where you set the antenna coupling and inductance. In such a case, connect a variable capacitor — like the one used with the lamp dummy — between the antenna post and the transmitter chassis. Adjust the capacitor and antenna inductance for maximum brilliance of your output indicator; this will be the best setting for the controls.

It may be that you want to use a two-wire feeder system and an antenna coupler. Such a system, complete with coupler, was described in March *QST*.[2] If such a coupler is used, the transmitter and coupler should be connected together with coax line. The inner conductor of the coax should be connected to the antenna terminal and the outer braid to the transmitter case, as close to the antenna terminal as possible. If de-

(*Continued on page 162*)

[2] McCoy, "A Multiband Antenna System for the Newcomer," *QST*, March, 1959.

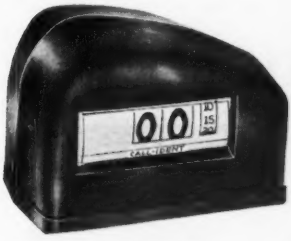
NEW!

CALL-IDENT©
10 MINUTE STATION CALL REMINDER

FCC REGULATIONS REQUIRE . . .

The operator of an amateur station shall transmit his own call letters plus those of the station being called or worked as follows. At least once every 10 minutes during any single transmission of more than 10 minutes duration, or at least once every 10 minutes or as soon thereafter as possible during a series of transmissions between stations having established communications. See 12.82 of FCC Rules and Regulations.

- 10 minute repeating timer that sounds warning.
- Buzzer warning you that you must sign your call letters.
- Special Independent Switch to turn timer *ON* when beginning QSO . . . warning buzzer sounds every 10 minutes. When Time Switch is off, clock continues running.
- Walnut or Ebony plastic case. 4" H, 7¾" W, 4" D, Wt. 3 lbs. 110V 60 cy. AC. Glolite dome-shaped full vision window GLOWS IN THE DARK.
- Self Starting TYMETER Electric Clock. 3 Year Guarantee. UL approved motor and cord. Numerals give you "Time at a Glance".



#210 CALL-IDENT 10-MINUTE STATION CALL REMINDER

12.50

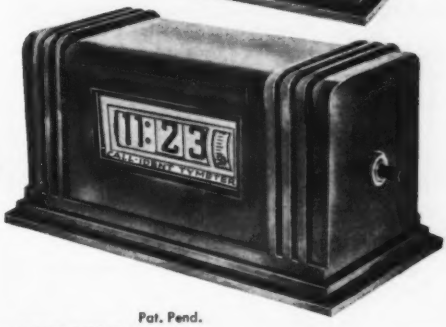
Ten minute repeating timer sounds warning, the buzzer warning you that you must sign your call letters. Special Independent Switch to turn timer ON when beginning QSO . . . warning buzzer sounds every 10 minutes. Walnut or ebony plastic. 3⅞" H, 5½" W, 3⅜" D, Wt. 2½ lbs. 110V 60 cy. AC. Full vision window glows in the dark. 3 Year Guarantee. Easy to read numerals. Self starting electric. UL approved motor and cord.

#124 CALL-IDENT 10-Minute Station Call Reminder with 24-HOUR TYMETER CLOCK

22.50

#112 CALL-IDENT 10-Minute Station Call Reminder with 12-HOUR TYMETER CLOCK

17.50



Pat. Pend.

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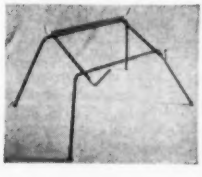

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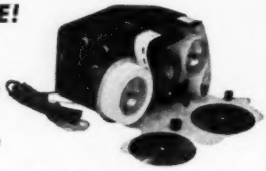

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sired, the antenna terminal can be removed and a coax fitting substituted.

The Novice power limit is 75 watts so the transmitter input should not be run in excess of this. The power input to the amplifier is determined by multiplying the plate voltage by the plate current. If you are metering in the keying (cathode) circuit the plate current is actually a little less than the meter reading. The screen and the grid currents should be deducted from the total reading, but the sum of these two currents won't be more than 20 ma., ordinarily.

When the coveted General Class ticket is obtained, all you need do is unplug the crystal oscillator, put the original tube back in the rig, and you're all set to move out of the Novice band. QST

Strays

The visiting USAF group that stopped at Baffin Island turned out to be nearly all hams. En route from Sondrestrom to Thule, they were delighted to inspect the shack. "It looked more like a ham convention than an official USAF inspection visit," said VE8TG, Paul MacDougall. Mac is pictured in the upper photo pounding out some c.w. Others with him in the "banana belt of the Arctic" are VE8NH, VE8RS and VE3TQ. The USAF hams, left to right in the lower photo, are W4BBR, W4BCN, W2KR, KØDWC, KØMQU, WØGDJ and W3QDE.

For Hams who TRAVEL . . . live in APARTMENTS

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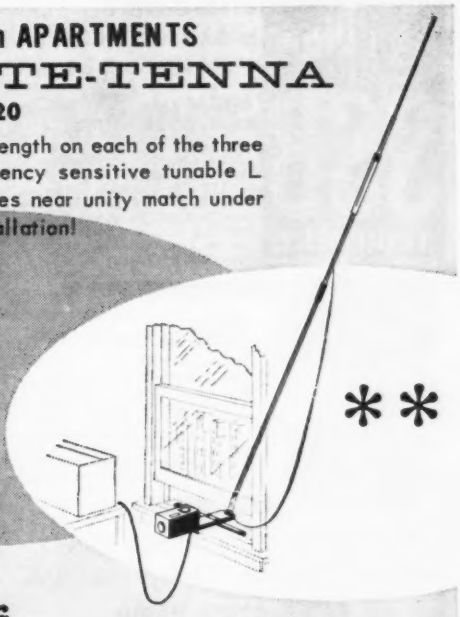
TOTE TENNA is a full electrical ½ wavelength on each of the three bands and is voltage fed through a frequency sensitive tunable L network. Tunes out reactance and achieves near unity match under almost every conceivable condition of installation!

A perfect traveling companion to the finest in portable/mobile rigs. Rated to 300 watts (AM), TOTE TENNA is also ideal as a fixed station antenna for low and medium power operation. No ground or radials needed! You're on the air in minutes with TOTE TENNA!



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PROFESSIONAL QUALITY COMMUNICATIONS RECEIVER –ENGINEERED FOR THE AMATEUR

IMPORTED

Superheterodyne Circuit Utilizing 8 Tubes & Rectifier Tube

- BAND SPREAD FOR EASY TUNING
- BUILT-IN "S" METER WITH ADJUSTMENT CONTROL
- ACCESSORY POWER SOCKET PROVIDED
- EXCELLENT SELECTIVITY • ALL TRIMMERS PRE-ALIGNED
- COVERS 455KC. to 31MC. IN FOUR BANDS
- VARIABLE BFO AND RF GAIN CONTROLS
- BUILT IN PRE-CALIBRATED "S" METER
- SWITCHABLE AVC AND AUTOMATIC NOISE LIMITER

KT-200
IN KIT FORM
64.50 6.45 Down

HE-10 WIRED AND TESTED
79.95 8.00 Down

High sensitivity superheterodyne circuit utilizes 8 miniature tubes plus rectifier tube and transformer input, full wave rectifier. The 80-40-20-15 and 10 meter amateur bands are clearly indicated on the illuminated dial face, and can be easily tuned with the pre-calibrated band spread. The receiver has complete band switching, thus eliminating the need for bothersome plug-in coils. Band spread is laid out on easy-to-read 0-100 scale, and features a weighted control knob which offers smooth, precise tuning. Coverage of from 455 KC to 31 MC is obtained through the use of four switchable ranges (455-1600 KC/1.6-4.8 MC/4.8-14.5 MC/10.5-31 MC). All controls, switches and phone jack are located on the front panel, while an optional accessory socket delivering 360 volts DC and 6.3 volts AC is located in the rear of the receiver. Signal to noise ratio is 10 DB at 3.5 MC with 1.25 microvolt signal. Selectivity is — 60 DB at 10 KC, image rejection is — 40 DB at 3 MC. Panel is grey metal with white lettering, and controls are black bakelite with aluminum trim. Hinged top makes inside of receiver readily accessible to operation. 7⅞" H x 15" W x 9" D. Shpg. wt., 22 lbs.

KT-200 ..... 6.45 Down ..... Net 64.50
HE-10 Same as above, factory wired & tested. ..... 8.00 Down ..... Net 79.95

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Russian Glimpse

(Continued from page 51)

hence would be unwelcome to the Soviet industrial managers.

With one hit and one strike to my record, I called the Central Radio Club through an interpreter. To my relief, the ARRL letter had been received and I was invited to attend a group meeting at the "House of Friendship", a clubhouse in Moscow. They apologized that the headquarters of the Central Club Radio were temporarily closed for renovation because of "unsanitary conditions".

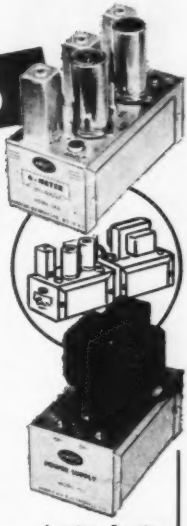
So, at 6 P.M. on my third day in Moscow, I entered a room filled with hams and other people. I was met by a Mr. T. Alexander representing the "Foreign Section" of the Central Radio Club. He fortunately spoke excellent English and introduced me to the rest of the group including Mr. Ernst Krenkel, RAEM, president; Mr. F. Burdeing, UA3AE, director; Mr. T. Karpushenko, vice-president in charge of Sport Activities; Mr. V. Ivanetsky, an editor of *Radio;* a very attractive YL who headed the QSL bureau, and several members including UA3BN, UA3BW, and two s.s.b. hams whom I had recently contacted, UA3EG and UA3CR.

The Soviet hams looked like any U.S. ham gathering, about the only distinguishing feature being their slightly longer haircuts. Krenkel sat on my left and is truly a man's man. He wears the decoration "Hero of the Soviet Union" which is equivalent to our Congressional Medal of Honor. He won this coveted award for his operation on the *S.S. Cheluskin*, a Soviet ship smashed in the polar sea in 1934. The call RAEM was used on that ship and he has kept it ever since.

The conversations started out with the usual greetings and numerous questions varying from "What did I think of the HQ-170" to "Does *CQ* always take so long to send out their WAZ awards?" All went well until Krenkel asked me "Do you believe in God?" I quickly answered "Yes" and since he emphatically does not, the tone of the conversations cooled somewhat. It was not until this point that I was informed that Krenkel had been invited to attend some convention in the U.S. (the Washington National Convention in 1958?) and for some reason or other his visa did not come through. I was sorry that my conversations had to be carried out in the light of such a handicap. Krenkel impressed me as being a very interesting ham. He has had tremendous responsibility for the U.S.S.R. polar activities. He mentioned that he had helped several U.S. amateurs get cards out of the rare U.S.S.R. polar stations. An interesting insight into his personality came from his comment on Hannah's article. Hannah states, "Russian amateur radio contests are treated as sports competitions. Before a lengthy contest (four hours or more), participants are urged to eat only light foods, and to maintain their endurance during the contest, they are urged to eat omelets and to drink strong sweet tea, coffee, or cocoa." "Not

(Continued on page 166)

NEW AMECO 2 & 6 METER CONVERTERS



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2-METER FEATURES INCLUDE:

- Crystal controlled.
- New 6ES8 high gain, low noise, cascode first RF amplifier. 6U8A second RF amplifier-mixer. 6AU6 oscillator.
- Spurious and image rejection—over 70 db.
- Noise figure better than 4 db.
- Gain—over 30 db.

6-METER FEATURES INCLUDE:

- Crystal controlled.
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The Ameco Converters are housed in a compact (2" x 2½" x 5") 2-piece brushed copper chassis. Brings in any signal that can be heard on any commercially available converter. The IF output on both converters are easily changed to allow converter to have any output frequency for hook-up to any receiver. The power requirements of 16 ma. at 100 to 150 volts DC and .85A at 6.3 volts AC for the 6-meter converter or 30 ma. at 100 to 150 volts DC and 1.15A at 6.3 volts AC for the 2-meter converter can be obtained from the receiver or from the Ameco Power Supply, Model PS-1, also housed in a 2-piece copper chassis. The power supply can deliver 50 ma. at 125 volts DC and 2A at 6.3 volts AC and may be used to supply power to many of the accessories around the ham shack.

	6-meter	2-meter
Converter complete with tubes and crystal for 7–11 Mc. or 14–18 Mc. in kit form with instructions	$19.95	$23.95
WIRED AND TESTED (with tubes and crystal)	27.50	33.95
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Power Supply complete in kit form. Model PS-1	10.50	
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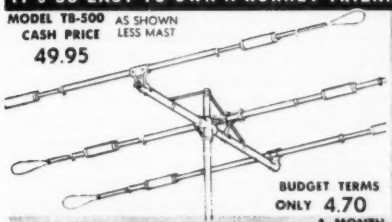

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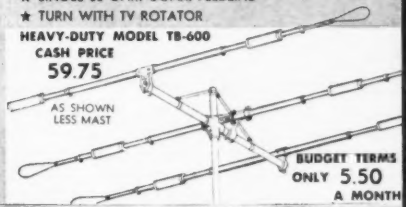

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so," says Krenkel. "Any Soviet amateur can win a contest after a full bottle of vodka." And I believe *he* could!

For the balance of the meeting we exchanged general information on our various ham radio problems. The most interesting question as to the total number of U.S.S.R. hams was neatly ducked. I finally asked if I could visit my s.s.b. friends UA3CR and UA3EG, both of whom had remained relatively silent during the meeting. After some discussion I was told by interpreter Alexander, "We will think about it." At about this time I was beginning to feel that as far as ham radio was concerned I had drawn a blank. However, at that very moment UA3BW, at the end of the table, speaking in faultless English, extended a very cordial invitation for Goodman and me to visit his house the next evening. At that, this meeting broke up and after some exchange of courtesies, Goodman and I retired to our hotel with a slightly beat feeling that could only be allayed by local spirits and caviar.

However, the next night proved what I had expected from the beginning: namely, that hams are hams all over the world. At 6 P.M. we were met by Alexander A. Shadsky, UA3BW. A ham since 1956, Alek is a charming young man of 25 employed as an engineer in the U.S.S.R. electronics industry. He was dressed in a very Brooks Brothers-type pin-stripe suit and shirt with French cuffs. We drove to his house just across the river from the Kremlin. His multiband vertical is on the top of a seven-story apartment house far above surrounding terrain. I noticed, however, that he was surrounded by several TV antennas!

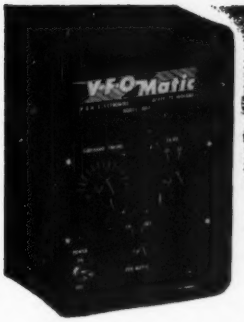
We made our way to his apartment by elevator, where we were most cordially greeted by his mother, several Central Radio Club officials, and an editor from the Soviet magazine *Radio*.

Shadsky's apartment was neat and full of warmth. It consisted of an anteroom, his mother's bedroom, living room–dining room combination complete with telephone, TV and hi-fi, and his own bedroom and hamshack combination. His bed was covered with a fine sealskin. A large picture on the wall of Rosemary Clooney indicated that at least one Soviet ham was not unbalanced in the technical direction.

Alek immediately sat down in front of his rig and two seconds later with some fast action on a bug was working an OK on 20 c.w. He quickly shifted to a.m. phone and we worked UA3EG who responded on loud s.s.b.

Alek's rig was v.f.o., with 100 watts output on phone and 200 on c.w. I took a careful look and was most impressed by the clean, workmanlike manner of construction. *All* the parts were U.S.S.R. made. So far Heathkit and B & W haven't infiltrated! The tubes and parts looked most unusual but good. However, when I asked what type of modulation circuit he used, he quickly dragged out the ARRL *Handbook!* His receiver was an AR-88. Shadsky told me that he expected to convert to s.s.b. within several months.

(*Continued on page 168*)



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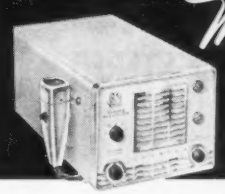

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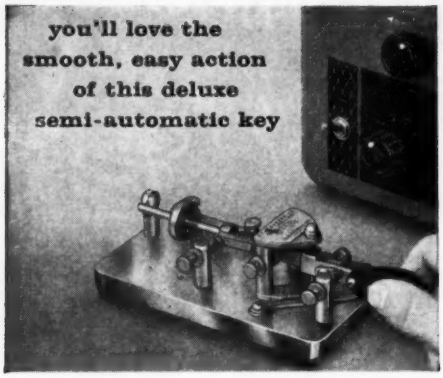

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Although I wasn't allowed to key his station, I was allowed to speak on the microphone in a manner similar to U.S. privileges. And, of course, I was allowed the most interesting opportunity of listening over all bands on his receiver. (Remember that it was 7:30 P.M. local time in September!) On 80 I heard little or no ham activity, phone or c.w. — mostly teletype and non-ham traffic. On the low end of 40, UA c.w. stations poured in as the W2's do at my home QTH. I heard no 40-meter phone stations. However, I did tune to the 7200–7300 end and paused wistfully as the Soviet jammers filled the room. Here I made several obvious comments to my rapt audience. Twenty was a little more lively. I heard a VE3 portable in Egypt and an EA on phone and lots of c.w. activity. However, band conditions were against any U.S.A. contacts. Again, the band sounded much less amateur than here in the States. The only sideband signal came from local UA3EG. Ten and fifteen were out at the time. All in all, I came away with the definite impression that we have more activity on the lower bands than the U.S.S.R.

[Alek has worked over 2000 U.S. amateurs and has many close personal friends in the United States.]

After this brief glimpse of the bands, Alek brought in several bottles of fine Soviet prime vintage and we all toasted each other. By this time all evidence of the cool atmosphere of the previous evening had thawed and I was literally deluged with questions. Typical: What is MARS? What is the difference between RACES and AREC? (*You* answer that one sometime!) What is the relationship of the ARRL to the FCC, to the IARU? What about *CQ*? What about the *Call Book*?

I detected a most genuine interest in our ham activities. However, I think that Hannah could profitably sit right down and write an article in Russian which tells succinctly about our ham organization. I am sure that it will be eagerly published by Soviet *Radio*.[1]

Over and over I got the impression that the Russians are very keen on the competitive as well as engineering aspects of ham radio. They have a contest each May in which they are most anxious to have large U.S. participation. This contest falls on the first Sunday of May unless this day is the first, second or third of May, their national holiday, in which case the contest falls on the second Sunday. Further, they feel strongly that there should be some international ham organization to coordinate contests and awards such as the F.I.S. does in skiing, etc. They want to win top international ham honors but would like an international, unbiased organization to be judge.

After a most extensive interview (which I think will show up in their magazine *Radio*) we adjourned to the dining room where Mrs. Shadsky served us a most delightful repast of tea, home-baked rolls, and an interesting but authoritative Russian punch. I noticed on the wall a picture of a very much decorated senior Russian

(*Continued on page 170*)

[1] It's in the works. — *Ed.*

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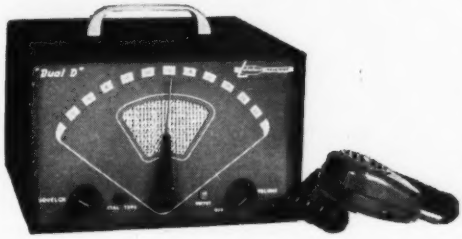

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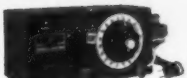

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officer whom I assumed to be Alek's (deceased?) father. The atmosphere was warm and cordial.

I apologize to both American and Soviet readers of this article for its superficial nature. It is impossible to write an article of any real depth on the basis of such a short visit. On the other hand, I most heartily recommend that any further U.S. hams who visit the U.S.S.R. follow up on my visit. Two avenues are suggested. First write your ham friends that you are coming and if possible get their telephone numbers so that you can call them when you arrive. The second approach is to have an Intourist interpreter call the Central Radio Club when you arrive. Their phone number as of just a few days ago was K4-30-70. However, before you go, be sure to get the answer to the RACES/AREC question! I wish to close by thanking my Soviet hosts for their courtesies during my visit. QST

Circle Completed

(*Continued from page 52*)

smoothly across the Pole in the world's first journey *under* the Arctic sea.

Ray Meyers had said goodbye to Sir Hubert and the *Nautilus* in Norway — but the last thing he did was to write a note describing the idiosyncrasies of the *Nautilus*' transmitter and carefully paste it inside the rig

"I had nursed that baby for nine months and knew by every grunt and groan what medicine to use to get it back on its feet," Meyers recalled. "I felt that since the instruction book was in error on several items, the guy getting stuck with the transmitter might appreciate some hints on its behavior and know what to do — in case.

"I remember well the Norwegian crew asking me to hurry up so they could lift it out of the submarine for packing and shipment to the States, but I made 'em wait until I finished the note. HI."

In fact, the transmitter had narrowly escaped the *Nautilus*' watery grave. The Limitations of Arms group at Geneva insisted that everything should go down with the sub and it took considerable argument to convince them that the radio was not military gear.

Back in the States, Meyers lost track of the transmitter. He gave his address with a radio station in Pennsylvania, but he soon moved to California and another job.

"Some ham told me over the air once (six years after the *Nautilus* venture) that some ham in New York had bought my old *Nautilus* rig. Sir Hubert said he hated to part with it but had to let Customs sell it because he was just about broke when it arrived.

"Back in New York a few years later, someone told me the guy that bought the rig was in California. About that time, I had given up hope of ever meeting the new owner or ever learning what happened to the rig."

(*Continued on page 172*)

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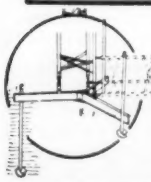

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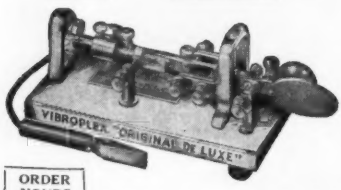

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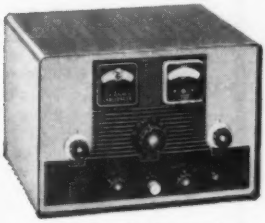

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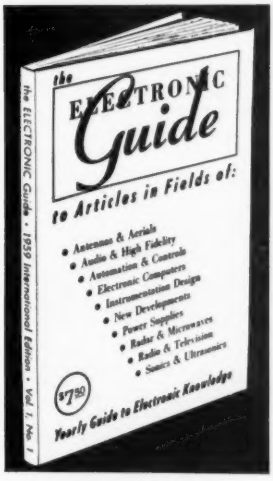
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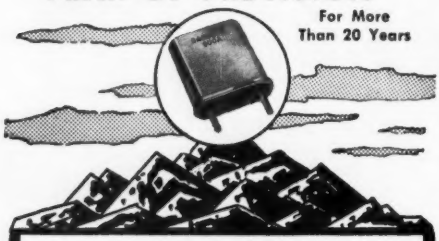

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Meanwhile, one day in 1937 a ham named Paul Weirick (then W2AN, now K6AK) had learned from a friend that an auction sale was coming off in the Custom House and a large RCA transmitter was going on the block.

He bid on the transmitter and discovered when he unpacked it at home that he had bought the gear from the *Nautilus*. He sold the motor-generator for more than he had paid for the whole transmitter, gave away two of the seven 849 tubes and took the rest of the gear along with him to California.

Becoming homesick for New York, he planned to move back. He decided to strip down the transmitter and modulator unit and sell the panels to a movie lot for a prop. Inside, he found the note, signed Ray Meyers. Intrigued, Weirick tried to contact Meyers, but found him long gone from the Pennsylvania radio station with no new address available. So, he put the note away and wondered if, some day, he might run into this guy Ray Meyers.

A second world war came and went. Weirick and Meyers, living in the same part of California, went their ways without ever knowing each other. The note from the *Nautilus* rig became faded and yellowed with the years.

Then, last July, ARRL General Manager A. L. Budlong, W1BUD, attended the SW Division convention in Pasadena, Calif. He visited Ray Meyers and then dropped in on some other friends, including Paul Weirick. They did some ragchewing and Weirick told the odd story of the *Nautilus* note, remarking that he had been on the lookout for this guy Ray Meyers for 20 years. "This guy Ray Meyers," cried Budlong, "is your League director!"

"Bud and Paul are so excited they call me at 1:30 A.M. to give me the news," said Meyers. "Today (August 5, 1959) I had lunch with Paul and he gave me the faded note that I had tucked gently away in the transmitter, figuring it might be of some help to an operator that happened to have to use the rig.

"Thanks to Bud, Paul, ARRL and a sentimental ham, I now have that note which Paul kept these long years hoping that some day he would run into this operator Ray Meyers.

"It's a strange world." QST

D-A-N-G-E-R

(Continued from page 48)

microphone. In the case of your key, test both key down and key up. Likewise test between your receiver and transmitter. If the voltmeter shows a potential difference, by all means make the necessary changes to get all three at ground or zero potential.

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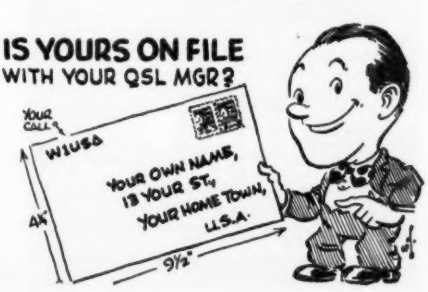
KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.

KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.



NEW 80-10 METER MOBILE SSB TRANSCEIVER

COLLINS

KWM-2

NOW AVAILABLE AT M. N. DUFFY CO.

It goes where you go—mobile or fixed station transceiver. No modification necessary. The Collins KWM-2 SSB Transceiver features voice or CW operation on all bands between 3.4 and 29.7 mc. Over-all frequency stability due to temperature, humidity and voltage ± 750 cps. Dial accuracy 1 kc throughout range. 175 watts SSB PEP or 160 watts CW. Upper or lower sideband emission. Weighs only 18 lbs. 3 oz., measures 7¾" x 14¾" x 13¼".

Net price, only **$1095.00** (power supply and accessories extra).

COLLINS DISTRIBUTOR

TRADE-IN TERMS AVAILABLE

M. N. DUFFY COMPANY

MICHIGAN'S HAM HEADQUARTERS

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FACTORY AUTHORIZED SERVICE

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Repairs, modernization, calibration and alignment by competent engineers using factory standard instruments. Collins, Hallicrafters, Hammarlund, Harvey-Wells, National Co. Service representative for Hickok and RCA Test Equipment. Factory parts. All work guaranteed. Ask any ham. Our twenty-fourth year.

DOUGLAS INSTRUMENT LABORATORY

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LOWEST PRICES

Latest amateur equipment • Factory fresh sealed cartons

Self-addressed stamped envelope for low low quotation.

H D H SALES COMPANY

Frank, W1ERX 919 High Ridge Rd., Stamford, Conn.

TRI-BAND CUBICAL QUAD KIT

BY VER-IND, INC.

• 20-15-10 Meters • Single feed for all bands, or separate feeders (specify) • Adjustable stubs • Better than 8 DB gain on 10 and 15 meter bands • Extreme stability • Less than 30 lbs. assembled • TV rotor will handle it • Copper clad steel or hard drawn copper radiator and reflector • Fully weatherproofed • 1.1 to 1 SWR • Rugged boom to mast fitting • Complete instructions. Can be assembled with screwdriver, pliers and wrench

Combination 20-15-10 meter kit—	**$65.00**	Cash Prepaid
20 meter kit—	**60.00**	C.O.D. plus
15 meter kit—	**55.00**	shipping charges
10 meter kit—	**45.00**	

VER-IND, Inc., *Box 389,* St. Johnsbury, Vt.

EL-KEY EL-KEY EL-KEY EL-KEY EL-KEY EL-KEY EL-KEY

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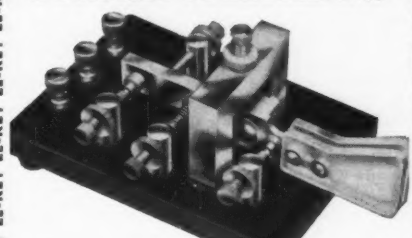
"YOUR KEY TO BETTER CW"



The new EL-KEY designed specifically for Electronic Keyers. No worries about makeshift keys, cut-up bugs, etc. EL-KEY gives you a sound keying lever for your new or old keyer at a price you can afford.

CHECK THESE FEATURES: ✓ Solid black cast base, 3½" x 5" ✓ Weight 3¼ lbs. ✓ Completely adjustable stops, contacts and spring tensions ✓ Machined brass yoke, arms, posts ✓ Chrome plated ✓ Silver contacts ✓ Double-lucite paddles ✓ Non-skid rubber feet ✓ For right hand or left hand sending ✓ Fully guaranteed.

Excellent as a **SIDE SWIPER!**

Low price—**$15.50** postpaid in U.S.A.

Slightly higher elsewhere

POUCEL ELECTRONICS

Division of Shore Mfg. Corp.

P.O. Box 181 — Babylon, L. I., N. Y.

Bob, W2AYJ — *Sid, K2FC*

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) **A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously noncommercial in nature.** Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) **Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

NOTICE!

Commencing with the December issue of QST the Ham-Ad rate (paragraph 3) will be 35¢ per word. The special Ham-Ad rate (paragraph 6) will be 10¢ per word.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communications equipment bought and sold W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

TRANSFORMERS (3) W2EWL Special. $3.00 postpaid, SSB, latest diagram, template, 3 xfrmrs, disc ceramic Emica condensers, coils L1 thru L7 for W2EWL Special (Mar. 1956 *QST*), $10.95 postpaid. Vitale. W2EWL, Denville, N. J.

ANTENNA 80–40–20–15–10, $21.95. Patented. Lattin, W4JRW, Box 44, Owensboro, Ky.

WANTED: Battery receivers of 1920s, Eria, Acme, Radiola, Grebe etc. Also UV199 thru UV206 tubes for electrical test. Buy or borrow. Grote Reber, Green Bank, West Virginia.

WANTED: Air or ground Communications or test gear. Ham or surplus. Collins and Bendix particularly. ARN14, ARC58, etc., Ted Dames, W2KUW, 308 Hickory St., Arlington, N. J.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan, Tel. NOrmany 8-8262.

WANTED: High quality military or commercial test equipment, receivers, transmitters, tubes, etc. Will pay cash or swap. Electronicraft, Box 399, Mt. Kisco, N. Y.

SPECIAL! W2EWL SSB transformers. New, 95¢ (3 for $2.50, 10 for $7.50); T-17 mike, brand new, sealed package. Only $4.95; Glas-Line, $2.89 per hundred feet; Gelose tape recorder, $179.95. Brochure available. Ling Closed-Circuit TV camera, brochure available. Complete tube inventory, best quality and sensible prices. 2C51 $1.50; 813, $8.00; 829B, $8.00; 837, $1.00; 866A, $1.50; 872A, $2.00. Write for free tube price lists. Green sheet catalog on equipment and parts, 25¢. Wanted: Unused transmitting and receiving tubes. Send list for cash offer. Distributors for 9BAW, Elmac, Hammarlund, Johnson, Westinghouse and others. Barry Electronics Corp., 512 Broadway, New York City 12, N. Y. Tel WAlker 5-7000.

FILL Those peaks: capacitors 120 μfd, 3000 V, G-E Pyronol, used, top condition, $35.00. Packing, $3.00. Chimner, W8LTF, 831 Antoine, Wyandotte, Mich.

DON'T Fail FCC tests! Check yourself with a time-tested "Surecheck Test". Novice, $1.50; General, $1.75; Extra, $2.00. We pay the postage. Amateur Radio Specialties, 1013 Seventh Ave., Worthington, Minn.

2 μfd 4000V DC capacitors, $5.00 each, or 2 for $9.00. F. G. Dawson, 5740 Woodrow Ave., Detroit 10, Mich.

HAMS! In central Illinois, it's Knox Electronic Supply, Inc. Where your trade-in is always worth more. 67 N. Cherry St., Galesburg, Ill.

S.S.B. xfrmrs, exact set of 3 (hermetically sealed) for W2EWL Special, brand new, $3.00 postpaid. New compact G-E 100-watt modulation xfrmr, multi-impedance (10 lbs.), $6.25; new Elmac vacuum condenser, 12 μμfd at 32 kilovolts, $5.50. G-E Pyrarois, 20 μfd at 1000 v.d.c. (330 vac) plus min. 4 for $6.00; 4 μfd at 1000 v.d.c. (330 vac)-min. 4 for $3.50. Please include postage, no c.o.d.'s Tucker, W2HLT, 51–10 Little Neck Parkway, Little Neck 62, N. Y.

QSLS? SWLS? Finest and largest variety samples 25¢ (refunded). Callbooks (latest), $5.00 postpaid. Religious QSL, samples 10¢. Calendars (1960) desk-size, 25¢. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Mich.

C. FRITZ Says "If it's worth a QSL let's do it right!" QSL-SWLS. In '59 try mine! Samples 25¢ deductible. 1213 Briargate, Joliet, Ill.

QSLS. Glossy 2 and 3-colors. Attractive, distinctive, different. 48-hour service. Samples 10¢. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples, 10¢ with catalogue, 25¢.

QSL-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3F8W, 1042 Pine Heights Ave., Baltimore, Md.

QSLS-SWLS. Samples 10¢. Maigo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLS. Twenty exclusive designs in 3 colors. Rush $3 for 100 or $5 for 200 and get surprise of your life. 48-hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSLS. Reasonable. 10 days delivery. Catalog dime (coin), Dick Crawford, K6GJM, Box 607, Whittier, Calif.

CREATIVE QSL and SWL Cards. Are you proud of your card? If not let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob Wilkins, Jr., KN5ZMT Creative Printing, P. O. Box 1064-C, Atascadero, Calif.

QSLS Samples, 10¢. Refundable. Also Net Award Certificates and Membership cards. W3KPJ Press, 1806 Water St., Wesleyville, Penna.

QSLS, SWLS samples 5¢. Nicholas & Son Printery, P.O. Box 1184, Phoenix, Ariz.

QSLS-SWLS. Samples free. W4BKT Press, 123 Main, McKenzie, Tenn.

QSLS, 500 cards, $7.00. 100 special quality Novice cards, $3.00. Samples, 25¢ refundable. All orders plus tax, postage. Gary Grant, K6QXZ, 3461 Angelus Ave., Glendale, Calif.

QSLS, 3-day service, samples 10¢. Don, K5OWT, 738 Gardenia, Ada, Okla.

QSLS. Reasonable, nice designs, samples dime. W2DJH Press, Warrensburg, N. Y.

QSLS Samples dime, Sims, 3227 Missouri Ave., St. Louis 18, Mo.

QSLS-SWLS. High quality, reasonable prices. Samples. Bob Teachout. W1FSV, 204 Adams St., Rutland, Vt.

QSLS, SWL'S VHF'S SYL-OM's. (Sample assortment approximately 9¾¢). Covering designing, planning, printer, arranging, mailing eye-catching, comic, sedate, fatabulous DX-attracting, prototypal, snazzy, unparagoned, cards, Rogers, K9AAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!)

QSLS: Fast service, send stamp for samples, Koster, K2UAX Press, 2941 Ewell Place, Wantagh, L. I., N. Y.

QSLS-SWLS, 100 $2.50. Samples 10¢. QSO File cards, $1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS, Taprint, Union, Miss.

SUPERIOR QSLS, samples 10¢, Ham Specialties, Box 3023, Bellaire, Texas.

QSLS-SWLS that are different. Colored, embossed card stock and "Kromekote." Samples 10¢. K8AIA, Turner, Box 953, Hamilton, Ohio.

QSLS: Send 25¢ (refundable) for samples. W6CMN, Schuch, 6707 Beck Ave., No. Hollywood, Calif.

QSLS, 3-color glossy, 100 — $4.50. Rutgers VariTyping Service, 7 Fairfield Rd., New Brunswick, N. J.

QSLS samples, free, Spicer, 4615 Rosedale, Austin 5, Texas.

PICTURE QSL Cards of your shack, home, etc., Made from your photograph. 1000, $12.00. Raum's, 4154 Fifth St., Philadelphia 40, Penna.

QSL Special: $1.75 per 100 cards, postpaid U. S. only. Glossy stock, red call letters, name and address. Green QSO information, etc. A.. orders mailed within 10 days. Free sample. Hobby Print Shop, Umatilla, Fla.

QSLS. Samples free. Phillips. W7HRG, 1708 Bridge St., The Dalles, Oregon.

RUBBER Stamps: Why wait for cards? QSL with rubber stamps. Sample impressions, immediate delivery. Kay, K2UKQ, Blanchet Rubber Stamp Co., 21 Lincoln Ave., Orange, N. J.

RUBBER Stamps for hams, sample impressions, W9UNY, Hamm, 542 North 93, Milwaukee, Wisc.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

QSLS. Get the best from DX. Samples 25¢. Payne, 2 Kulik St., Clifton, N. J. Shop telephone GRegory 3-4779. Home: GRegory 1-7885.

QSLS, SWLS. Samples 10¢. Onondaga Press, Onondaga, Mich.

QUALITY QSLS. Samples and prices, 10¢. Best deal all around. Savory Press, 172 Roosevelt Rd., Weymouth, Mass.

QSLS! WAT, Box 1, Brecksville, Ohio.

QSLS. High quality, low prices. Fast service. Samples 10¢. Dave, 601 E. Maude, Sunnyvale, Calif.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS. Modern designs. Samples. Paye, W4ZKK, 824 Avondale, Cocoa, Fla.

GLOSSY QSLS. 100, 4 colors, $3.50. Others less, Samples 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Michigan.

QSLS. Stamp brings samples, Eddie W. Scott, W3CSX, Fairplay, Md.

QSLS-SWLS 3-colors, 100 for $2.00. Samples, dime. Bob Garra, Lehighton, Penna.

RUBBER Stamps, QSL stamps. Free catalog. Boiles, 7701 Tisdale, Austin 5, Texas.

QSLS: Quality samples 25¢. W6LKJ, Terrel Tatum, 1451 Raymond Ave., Glendale, Calif.

QSLS, Lapel pins, samples dime. Kephart W2SPV, 4309 Willis, Merchantville, N. J.

COAXIAL Cable. New surplus RG-54A/U, 58 ohms impedance — 30 ft. prepaid, $1.00. Radio magazines, buy, sell, trade. R. Farmer, 3009 No. Columbia, Plainview, Texas.

INSTRUCTOGRAPHS Wanted: used, A.C. models, complete with tapes. For use in Amateur Radio class. State age, condition and price. G. E. Taylor, VE3EDG, 2835 Isabella St., Ft. William, Ont., Canada.

WANTED: HRO50T1, 15 meter coil. WØIUB, 5019 Gramar, Wichita, Kans.

HAM Licenses, resident courses. Novice and General classes, 3 evenings weekly. Delehanty Institute, 117 East 11th St., New York City 3, N. Y. Tel. GR 3-6900.

COLLINS 51-J-1 receiver, $450. In excellent condition. W2ZMG.

COMPONENTS: QSL K2GBH.

FOR Sale: NQ120X with speaker, $125; 75-watt 80-10 meter 6146 transmitter with VFO, cathode modulator, but, $50. Both for $160. Edward Westbrook, 226 Lawrence St., New Haven 11, Conn.

DELUXE Call letters: engraved polished black phenolic laminated 2½ inch white letters on 3½ x 14 x ⅛ in. beveled blank. $1.95 P. P. J. Mudie, W8LWW, 3701 Germaine Ave., Cleveland 9, Ohio.

MOBILE Hams! Stop generator where ignition noise regulator clicks, $5.25 postpaid. Specify frequency. Gerald Electronics, 19 Salem St., Cos Cob, Conn.

CHICAGOLAND Amateurs! Factory authorized service for Hallicrafters, Hammarlund, National, Globe. Service all amateur equipment to factory standards. Heights Electronics, Inc., 1145 Halsted St., Chicago Heights, Ill. Tel. SKyline 5-4056.

CASH for commercial or surplus transmitters, receivers, test equipment, particularly aviation type Collins, Bendix, ARC, etc. Ritco, Box 156, Annandale, Va.

SAVE On Electronic, Radio and Communication Components and equipment for Hams and commercial use. See thousands of parts in stock — many more coming in daily — too numerous to catalog, all at unusual savings. If you live in or near Philadelphia, visit our new warehouse. Selectronics, 1206 S. Napa St., (at 31st and Grays Ferry), Philadelphia 46, Penna, or phone HOward 8-4645.

HAMS! Learn Calculus. Powerful mathematical tool. Easy practical lessons. First four $1.00. Matheo, 4256-2 Minmor, Cincinnati 17, Ohio.

"PIG-IN-A-POKE"? Not if you visit Ham Headquarters, USA and see and choose from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-in Center. More for your money, because tremendous turnover makes lower overhead! Terms, trades. Send postcard for mouth-watering photograph and price list Q-6. For the best in all new and used equipment, it pays to come to "Ham Headquarters, USA"! HCNU, 73, Bill Harrison, W2AVA, 225 Greenwich St., New York City, N. Y.

LEECE-NEVILLE 6 volts 100 amp. system — alternator regulator and rectifier, $45; also, Leece-Neville 50 amp. system, $50; 12 volt 100 amp. system, $85, guaranteed no ex-police car units. P.E. 75 D gas generator 2500 watt a.c. 120 volt, 60 cycle used 10 hrs., $250. Herbert A. Zimmermann, Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Tels. ULster 2-3472 or JAckson 2-2158.

TOROIDS: Uncased 88 mhy. like new. Dollar each. Five, $4.00. P. P. DaPaul Co., 101 Starview, San Francisco, Calif.

HAM TV Equipment bought, sold, traded. Al Denson, W1BYX, Rockville, Conn.

CASH for your gear. We buy, trade or sell. We stock Hammarlund Hallicrafters, National, Johnson, Gonset, Globe, Hy-Gain, Mosley and many other lines of ham gear. Ask for used equipment list. H & H Electronic Supply, Inc., 508-510 Kishwaukee St., Rockford, Ill.

SAN FRANCISCO and vicinity: Communications receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited, any equipment. Associated Electronics, 58 South P St., Livermore, Calif., W6KF, Skipper.

FOR Sale: 810 Class B modulator, $50; power supply, output 2000 volts-500 Ma. out, of filter, $70; 77 in. rack with castors, like new, $35. Landfield, 821 Waveland Rd., Lake Forest, Ill.

DX QSL Co-op, Box 5938 K. C. 11, Mo. Save time and $$$. DX QSL'ing. Only 2¢ per card after membership. $2.00 for 5 years.

SX-100 $195, HT-32A $595, NC-300 $245, NC-183-D $249, HRO-50T1 $249, HRO-60 $375, NC-66 $89, SP-600 540KC-54 MC. $395, BC-794B $159, 75A-1 $249, 75A-4 $595, 51J3 $575, SX-101 $255, HQ-160 $295. Teletype converters, printers, perforators, etc. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. (Richmond 2-0048) (Store: 60 Spring, Newport, R. I. Fred W1JFF)

SEND For list of good buys at bargain prices. Box 575, New York 8, N. Y.

SIX Meter kilowatts: page 24 July 1959 *QST*; parts, kits, complete: Richcraft Engineering, Sterling, Va.

SWAP Or sell over 2000 back issues *QST* and CQ, 1926 to present. Want receiver and transmitter, all-band VFO AM/CW or will sell all 25¢ each (take 'em all!) WØDVN, Box 5938, Kansas City 11, Mo.

FOR Sale: Collins KWS 1 complete; Jones MicroMatch, 5 in. Dumont scope, 100 or so tubes. Ten min. timer. First $1,250 takes it all. W1CPI, Wakefield, R. I.

WANTED: Trandes new and used: KWS-1, $1250; 32S-1, $590; 75S-1, $495; 32V2, $350; HQ100, $149.50; HQ-110, $209; HQ-129; HQ-145, $269; HQ-160, $379; HQ-170, $359; Johnson mobile, $75; Thunderbolt, $589.50; Valiant, $439.50; Johnson Citizen Messenger, $139.75; Courier, $289.50; Hallicrafters 101 Mark III, $395; HT-33, new, $495; SX-99, $119; SX-100, $295; HT32A, $695; S107, $94.95; NC-125, $139; NC183D, $319.50; NC-173, $139.50; NC-57, $69; SW54, $35; CB 100 Citizen, $129.95, Globe-King 500A, $425; 90 Chief, $49.50; 90A, $54.95; 680, $94.95; 680A, $97.95; DSB100, $129.95; VFO 755, $42.95; NC300, $299.95; NC2400, $169.50; CE20A, $195; 10B $139.50; CE slicer, $37.50; WQ multiplier, $59.95; Heath DX35, $54.95; AT-1, $23.50; DX20, $54.50. Easy terms. Ken-Els Radio Supply, 428 Central Ave., Ft. Dodge, Iowa, or 128 31st St. N.E., Cedar Rapids, Iowa.

SELL: Telrex full size Triband beam, one transmission line, $110; 3281 with pwr supply, $605; 75S1, $435; E-V 600D mike, $10; WRL speech booster, $12; Elenco compression ampl., $30; field phones, $30; Tri-Ex Tower, 56 ft., cost $250, sell for $150.00; Magnacordette stereo recorder, $325; Atlas mike stand; UTC S12, S46, S62. R. Lamb, 1219 Yardley Rd., Morrisville, Penna.

SALE: HT-32, $530.00; SX-28 Communications receiver, just realigned, $100; Heath Mohawk receiver, perfect, $325. Will deliver: Houston, Dallas, Ft. Worth. WØGPT, 1860 Terrell, Beaumont, Texas.

75A2, converted to A-3, with 3.1 Kc and 800 cycle mechanical filters, Viking II and Viking VFO, factory wired, both for $495. Paul Sligh, K4UYC, 17th Ave., Columbus, Ga.

SELL: KWM-1 with 516-F AC power supply, Dynamic hand mike and 6 in. spkr, $700, used very little. K6OJO/4, BOQ T-52, Ft. Myer 11, Va.

SELL: Like-new condx, HQ100 w/clock, $150; Lettine 240 xmtr w/lo pass filter, coils & crystals, $60. Call Rich FA 4-0671.

SELL: DX-40, Knight VFO, both for $90. Ralph, W2AWH, CY 3-7435.

HALLICRAFTERS S-85 with Hallicrafters S-meter (excellent condition), $85. K1AJL, 35 Terrill St., Rutland, Va.

FOR Sale: RF section and VFO and FM modulator combination final uses an 829B; Gotham V40 vertical; AM modulator for above RF unit; 28" Bud rack cabinet. Homebrew KW antenna tuner. You make offers. K2MMI, Herman La Pierre, West Chazy, N. Y.

FOR Sale: Heathkit AR-3 in gud condx. John Dunn, 63-39 Booth St., Rego Park 74, N. Y.

SELL: DX-100 for SSB, CW, AM, $190; SB-10 SSB generator, $90; original Deluxe bug, $15; Astatic type "G" stand, $10; antenna changeover relay, $5; prefer package deal therefore take all for $300. F.o.b. Long Island, K2MDL, Marty Brody, P.O. Box 924, Lehigh University, Bethlehem, Penna.

SELL: Heathkit mobile, Comanche, Cheyenne, power supply, mount, and "Slim Jim" all-band whip. In perfect operating and physical condx, $325. Jim, W2YCS, 145 Ackerman, Ridgewood, N. J.

HQ110C, damp chaser, matching speaker, superb condition, $195; 5-element 20 meter Telrex beam, $95; 3-element 15-meter Telrex beam, $35; Amphenol rotator and indicator capable of rotating both beams, $65. K5MWU, Dick Berrisford, Qtrs 1831 B, Blytheville AFB, Ark.

00's; Commercials; Millen Model 90515 frequency calibration unit, meter and books, used slightly, for checking AM and FM station. Want linear, SSB exciter, beams, W2YIY, 53 Gorton St., Corning, N. Y.

NOVICE Weskit BN-1-A portable, battery powered, 5 watt, 40–80 meter transceiver with crystals, key, earphones, 100 ft. dipole antenna, instructions. Without batteries. Originally $40, $34. Bowles, 802 S. 33rd, Louisville, Ky.

PROP Pitch motor, 110V reversible motor (new), controls, Selsyn indicators, $25; meters, rectified decible, $4; lab type 4" Weston 300M, same 50M same 2A, round 5A, round 50VDC, all 4 $2.00 each. Delta power transformer 3000V CT, swinging choke, 866 fil. trans. Complete $20. Dr. C. P. Crosby, W1QP, R.F.D. Chatham, Mass.

SELL: Mobile gear, Sonar 75, 20, 10 receiver with Vibr. supp, $35; Lysco 10 meter trans with dyn., $25. Also Johnson Courier amp., in new condx, $200. Bill Rufe, K2YIY, Mt. Rt. 12, Phillipsburg, N. J.

SELL: Hallicrafters SR 34, six and two meter transceiver, 110 volt AC, 6–12 volt D.C. used ten years; $400. J. G. Roberts, W2UO, 7 Dolphin Green, Port Washington, N. Y.

SELL: DX 35 $45; NC 98, $100; unused plate transformer 2000V CT 700 Ma., $15; also, Heath VFO, Q multiplier. Don Weiman, K2UOB, 275 So. Willard, Burlington, Vt.

GLOBE Scout 680A with a Heath VF 1, $100; NC 125 with Heath QF 1, $110. Will ship. Gerald Krieg, K9MZJ, 541 So. 69th St., West Allis 14, Wisc.

JOHNSON Pacemaker with instrux manual, $300 or your best offer. In like new condx, has been in storage. Prefer West Coast sale. Will be willing to pay freight. Nelson Denison, W1VCU/KH6, 3772 Fiaherty Circle, Honolulu 18, Hawaii.

MUST sell Eldico 100-F and/or 1000 F, both units in like new condx, Logged less than 100 contacts. Best offer over $1000. Reason for sacrifice: got the mobile bug. K2QGT, 80-61 104th St., Richmond Hill 18, N. Y. Phone VI 7 8565.

SELL Pacemaker, like new condx, $349. Telrex Triband beam with Radiart Hamm rotator, $149; 75A4, Serial 212, very clean, $439; Matching Collins speaker, $10. Gene, W9ERU, Box 273, R.R. 4, Rockford, Ill.

WANTED: 6 to 12 304TL tubes. Callanan, W9AU, P.O. Box 155, Barrington, Ill.

FOR Sale: Elmac A-54 mobile transmitter with Eicor dynamotor, Sonar MR-3, 8-tube Superhet mobile receiver with Radiart 453 power supply. All in A 1 condx, $125. Walter Bickmeyer, W2NI, 31 Azalia Court, Hempstead, N. Y.

WILL swap model aircraft engines for top condition commercial xmtr such as: DX35-440, Adventurer or Chief. Have: Fox 35, Torpedo 19, Johnson 35, Fox 25, Enya 35. All or part plus cash. Also have $25, like new Shakespeare bait-casting outfit. Need starting help. Make an offer. Write: Joseph Mocker, Jr., 47 Prospect St., Taunton, Mass.

CASH for KWS-1, 75A4 or HQ-170. W4SN.

COMPLETE mobile station, Elmac AF-67, Gonset G-66B, Master Mobile Mount, Mosley Tri-band verticle, power supplies, three relays, five coax condensers, push-to-talk mike, control panel, etc., $350. K2OUC, 25 Woodbine Circle, New Providence, N. J.

COMMUNICATOR I, 2 meter rig, $100. In FB condx. Write: Nat Wadsworth, Baywater and Waverly Roads, Noroton, Conn.

FOR Sale: SX 28 Hallicrafters revr, R46 spkr, Heathkit Q multp. built in xtal calib., all in gd working condx, new tubes, only mod. in audio stage; needs alignment on 15 and 10. Have instrux books. All for $65. Will be willing to ship collect. W8OPF, 3045 N. Roosevelt Ave., Columbus 9, Ohio.

SELL-Trade: 20 watt 75-40 meter mobile transmitter, mike, xtals and power pack included, xmittr in excellent & like new condx, $45. New 40-watt plate modulator, $18. New power supplies: dual tapped 700-600V/200 Ma./6.3v. $18; 750v./250 Ma/6.3v, $20, brand new tubes, prices include new filament xfrmrs for all tubes: 304TL, $25. Pair 811As, $12. Pair 814s, $15. New power supply kits, punched chassis included: 1100v./250 Ma. $22; 1200v./250 Ma., $25. Complete 40 watt 80 meter Novice xmttr, $25. Stan Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

SALE: 75A4, new condx, #3561, never removed from cabinet, vernier knob. Best cash offer. W4KGR, 2333 Elizabeth, Winston-Salem, N. C.

PACEMAKER for sale: $375. Excellent condx. Will ship in original container. W8QYS, J. Bennett, 6779 Franke Rd., Cleveland 30, Ohio.

SELL: Johnson Tunderbolt kilowatt linear factory wired, like new. Will demonstrate, then you take along for $425. Complete set *QST*, bound volumes December 1915 through 1930; binders 1931 to date. Also complete set CQ. Make offer. Potter, 233 East Ave., Park Ridge, Ill.

SELL: Mint ART-13 with Comco xtal osc., $49; DX-35, VF-1 mint condx, $55. F.o.b. K8CVV, 4612 Woodland, Royal Oak, Mich.

SELLING Out: Collins 75A4, Ser. 5429, with spkr, $650; Collins 70ES VFO, with regulated power supply, $65; Pierson KE93, 6 & 12 volt supply, $260; Gonset G-77A mod. & supply with cables, $260, like new, used less than 10 hrs. Both for $500. Heath Apache, excellent wiring, no bugs! Used less than 10 hours, $235. Heath SB-10, checked out, but never used, $90. 35 ft. Rohn No. 6 tower in 10 ft. sections, $45. Thrust bearing for tower, $10. M. H. Crain, W7YOF/5, P. o.b. 207 Perimeter, S.E., Albuquerque, N. M.

CASH Paid for used shortwave equipment. S40 rcvr, $39; A54H xmttr, $39; HQ110 spkr, $10; R46B spkr cabinet, $5; Eidico Antennascope, $10; 2-814 tubes, $16. Shipped F.o.b. Treger W9IVJ, 2023 N. Harlem Ave., Phone TUxedo 9-6429. Chicago 25, Ill.

SCREEN modulator, WRL, $9.00. Loftin, 404 Dakota St., Piedmont, Alabama.

75A-4 matching speaker, Ser. #3075, 3 Kc filter. Price: $500; B&W 5100-B, 52 ohm input, Ser. #1626, Price: $325. All three pieces in excellent condition. No modifications. Not a scratch! W2MJH, 57 South St., Middletown, N. Y., Phone DIamond 3-4487.

SELL Globe Chief, UM-1, Knight VFO, pair 811s in modulator, pair 812s in final, power supply, spare power xfrmrs: $175. Sorry, can't ship. Write to Craig Lund, Rocky Hill Rd., Saco, Me.

SELL: SRT-120P xmtr, 100w., c.w./fone, bandswitching 80-10M., $120; VFO, $10; Advance Relay coaxial relay CB1C2C115Va, $8; D-104, $12; SWR bridge, $15; 4-el 10 mtr. beam, $25; rotor, $15. 10w. CW 40-80 xtr, $15. K2YZG, Jon Hirsh, 1193 Lincoln Place, Brooklyn 13, N. Y. Tel. SL 6-9048.

WANTED: 80 Meter HDVL coil; 40-20-15-10 TVI. coils. For sale: Philco BC221N freq. meter, Ser. #6477, in exc. condx. W1BB.

SELL: Harvey-Wells Bandmaster Senior, 8 bands xmtr model TBS-50-C with power and Electro-Voice 210s microphone. Equipment used 3 hours operating time. Brand new condition. W1WXN, $90.

FOR Sale: KWM-1, AC pwr supply, 312-B speaker console unit. All in new condition and original packing, $850. Shipping paid. W5UV, 3837 Lexington Avenue, Port Arthur, Texas.

WANT 1925 or earlier ham and broadcast gear. Personal collection. No dealer. W4AA, Wayne Nelson, Concord, N. C.

WANTED: Gonset II six meter amplifier, Super 12 converter, 2 meter Communicator III; Millen Grid Dipper; Johnson 275 Matchbox; low pass filter; Capitol or Cleveland Radio correspondence course; RME Preselector; Regency converter; Gardiner code sender; 2 and 6 meter converters. Stan Anderson, 122 Ringdahl, Rome, N. Y.

NEED Money for college! Selling all Ham equipment: National 183D, perfect, $225; Collins 32V-3, just overhauled all new tubes, perfect, $425. Hate to lose this one, but need cash. Collins 75A4 treated better than wife, $575. Call Bob Anderson, W1LBA, evenings BLuehills 8-9337, Milton, Mass. Days CApitol 7-2980, Boston.

DX-35 good condition, $40. W2QCI, 251 Price St., Lockport, N. Y.

600L for sale, $275 cash. R. A. Bevernick, Rte. 1, Box 11, London Bridge, Virginia.

20-A, QT-1, $150. New Bandhopper VFO, $80. John Mansheim, W0JCS, 1311 Ave. B, Ft. Madison, Iowa.

WANTED: BC-610 transmitters. State condition. AN/PRC, AN/GRC equipment, also listings Government type components. Cash, swap, name it! Apex Airtronics, 2467 Atlantic Ave., Brooklyn, N. Y.

FOR Sale: Hallicrafters SX-71, best offer! Also Globe Scout 680 xmttr, best offer. Both are in excellent condx! You pay shipping costs. Edward Joy, 825 W. 21st Ave., Spokane 41, Wash.

FOR Sale: National NC98, Globe Scout 680, best offer. Will sell separately or together. Both in excellent condition and used slightly. Bob Dillion, S2121 Lincoln, Spokane, Wash.

DX100, vy little used, $140; SX-96 with spkr, $160; Sonar SRT-120, complete 813 phone rig, Command transmitters and receivers, tube tester; Heath balun coils; Heath Grid Dipper and signal generator, heavy duty transformer, mobile power supply, 813s, 807s, 811s, 6L6s, 872s, 524s and over a hundred other usable tubes, besides switches and equipment enough to stock up a club for building. Also will trade for a DX-35 or DX-40. Phone thru Centerton, Ark. R. H. McAfee, Rte. #3, Bentonville, Ark.

FOR Sale: Factory-wired Globe Scout, 680. Hardly used. Has a built-in relay for ant. switching and receiver muting, $75. Hammarlund HQ-170C. Practically new, $320. The big S200 matching spkr, $15. Both for $325. BC645 untouched, $15. All f.o.b. Scarboro, Me. "Doc" Lawrence M. Hagerthy, W1RYM.

ESTATE Of W5WF: HQ-150 rcvr, w/spkr, $200; Regen. Navy rcvr, $30; HT-9 xmtr, $38; D-104 mic, $15; DX-35 $30; DX-35 minus pwr xfrmr, $15; Jackson tube-tester, $25; crystal mic (partly built KW rig) has final, pwr supply and rack) Hi-voltage condensers, xfrmrs and multitude of small tubes and parts. First $400 gets everything. L. R. S. Shackelford, K5HSW, Box 686, DeQuincy, La.

FOR Sale: HT-33, used less than 60 hours. Has been completely checked by professional. Shipped prepaid for $450.00. Will be happy to arrange terms. Contact: James R. Howerton, M.D., P.O. Box 86, Columbia, No. Carolina.

SELLING — Going to college: NC-300, $260; National 6 meter converter (4 tube), $30; PP 4-125 50 Mc final with driver — uses 8 Mc. xtals, 800 watts, $50 with tubes. Jim Cessna, W0SMJ, Indianola, Iowa.

FOR Sale: Collins 32V-3 transmitter, $425; also have B&W low pass 5212, Heathkit SWR bridge and Gonset Monitone. Richard Roos, W2PNT, 141-48 78th Rd., Flushing 67, L. I., N. Y.

WANTED: Collins 310-B for cash. Have 5000V 4 amp. pwr xfrmr to sell or trade. No center tap. Ben Sherman, 2243 E. 26th St., Brooklyn 29, N. Y. DE 2-2339.

SALE: BC342N with RA-20 115V AC power supply, $50. KØRHE, 374 Elmwood, Fargo, N. D.

COLLINS KWS-1, $1295; 75A-4 with spkr, $595; high serials, exc. condx, best offer considered. WØZB, Box 2832, Pompano Beach, Fla.

SELL: One very clean S-53A rcvr. Best offer over $65. Charles K. Hardy, K8SUL, Box 177, Buffalo, Texas.

GLOBE Chief 90A, factory-wired, used less than month, plus SM9 screen modulator, going hi power: $65. L. M. McGee, 58 Campus Dr., No. Buffalo 26, N. Y.

SELL: Supreme Tube Tester, Mod. 504-A, $25; BC-455, $7; Globe Chief 90, $35; ARC-5 for 20M, $7, or take all for $60. Jeff Hopkins, WA2DPK, 1205 Sleepy Hollow Road, Point Pleasant, N. J.

SELECTIVE Combo: SX-99, gud condx, with installed Heath QF-1, Q-mult., $125 plus shipping. K2UZJ.

FOR Sale: 2-element 15-meter beam and rotor with indicator. Contact John Senter, 1822 Main St., Humboldt, Tenn.

CRANK-UP, tilt-over, 40-ft. tower, like new condx, painted silver, $79 F.o.b. New Orleans, La., or trade for transmitter, receiver, linear. Jim, P.O. Box 6073, New Orleans 14, La.

HALLICRAFTERS SX-71, in perf. condx, all new tubes, $150, with R-46A spkr and 100 Kc. oscillator in speaker cabinet, $165.00 or make an offer. S. B. Hall, 2225 Randolph Street, Florence, Alabama.

COLLINS 30K, $395; Globe Scout 40A, $45; BC191F, $25; BC645A, $25; Bud VFO, $15; Ranger, never used, just tested, $170; Viking 2CDC, $295; Hallic. SX-71, $130. Will trade Mercury outboards, TV, appliances or cameras for ham equipment. Hal Blough, W9SP, Blough Miner Co., Forest Park, Ill.

FOR Sale: NC-109 with instruction manual plus 15/10M xtal converter in Oct. '58 *QST*. Make offer! W2TCL, Mark Stern, 50 Linden Blvd., Brooklyn 26, N. Y. Tel. IN 2-5478.

SELL: 32V2 transmitter, with two spare 4D32 tubes, B&W TVI filter, $295; BC-645, 465MC. transceiver, 12/24V DC dyamotor, antennas LU-1 signal generator, $34; MO-1, 3-8 Mc transceiver, $15; 12V DC dynamotor, 440V DC, 200 Ma $10; AN/APA-10 Panadapter, built-in 60 cycle power supply, $40. Items F.o.b. Ogden. Have list. Lowell Maw, W7NHQ, 1419 Swan St., Ogden, Utah.

GONSET 6 meter linear amplifier, $80; 4-250-A, $25; Collins 310-C2 PTO with added buffer, $50; Gorden 1 Kw ant. relay $3.50; Thord T-11F63 5V, 13 amp., $3; T-15D82 multi driver, $3.50; Stancor P-3020 10V 10A, $3.50; Carter dyn. 6v. inp. 425 at 375 outp. mounted with relays and filter, $10. F.o.b. W2KJF, Bacon Hill Rd., Pleasantville, N. Y.

CLEANING House! HQ-140X, $170; BC-221, $65; 829Bs, 832As, transformers, misc. surplus gear; Leica M3 with accessories, new, never used, Worth $600. Want KWM-1 in swap. I. Seidman, Park Town West, 1202; Philly 30, Penna.

COMPLETE Station: $300; all items like new condx; Johnson Viking Ranger, Matchbox, National NC-98, Johnson low-pass filter, VSWR bridge, Signal Sentry, Astatic T-3 mike. With instrux books. Will separate at higher unit prices. Frank Schnabl, W1ENH, 87 Sampson Parkway, Pittsfield, Mass.

SELL: PE101C dc dynamotor, 13 volts input, 135 Ma. at 400 volts output, $7.50; AR-2 rcvr with cabinet, $18.50; Heath Q multiplier, $6.50; Heath Balun coils, $5.50; Heath electronic switch, $10.50; 500 watt 80 and 15 TVI coils with shielded link and hinge, $6.50; 1000 watt 80 meter coil with shielded link and hinge, $8.50. Roger Bross, W1QAF, Box 157, Natick, Mass.

COMPLETE Station for sale. Viking II and VFO, foot PTT, SX-288, plexiglass console, blower, Conelrad, CW-monitor, telephone, antenna, relays, line filtering and metering, built-in mike, bug, straight keys, crystals, antenna tuner, baluns, all interconnecting cables. All for $475. Also, CDR rotator, 5/5 two meter beam, windom, twenty meter ground plane, masts. Write K2TBU/W, 10 Buckingham Rd., Rockville Center, N. Y.

MUST Sell: DX35 in excellent condx with three xtals and J-38 key; will accept best offer over $45. Also, DX20 with Johnson modulator with three xtals, best offer over $40. Ron Alspaugh, W6NKS, 18802 Ervin Lane, Santa Ana, Calif.

FOR Sale: Sterecorder, records and plays stereo and monaural tapes and two Goodman 12 in. spkrs, $430; Central Electronics Q multiplier, $12; 12 volt Collins pwr supply and mobile mount with cables for KWM1, $230. K2SVQ. Tel. DElender 5-7172.

SELL: 75A-3 with speaker. Mint condition. Hardly used. $360. Carver, 3101 S. Wabash, Chicago 16, Ill. CA 5-5260.

SALE: SX-42 with R-42 bass reflex spkr, 0.55 to 109 Mcs. contin. tuning. AM/FM, $125, will ship. Bill Bettis, 2808 N. John Marshall Dr., Arlington 7, Va.

RME-69, clean, with speaker and manual, $50; BC-454 receiver, $7. Enclosed rack, 56" of panel space, with heavy duty casters, $20. 100 watt Class B modulator, with push-pull speech amplifier, D-104 mike, $40. Dual power supplies for above, with table rack, $25, S-20, 60-watt multi-tap modulation transformer, $6. Cash and carry. George Ruiffs, W2CJY, 38 Brookwold Drive, Manhasset, L. I., N. Y. Tel. MA 7-0407.

SALE: Cash: SX-100, like new, $150. Also, Globe Champ 300A, $275. Contact K4KHE, Franklin, Ky.

BC-312, converted, instruction book, etc. $55. Anthony Schultz, 49-15 Skillman Ave., Woodside, N. Y.

SX-99, $100. Write for details. Ed Escalion, 5 Dunlap Way, White Plains, N. Y

HQ-100C w/xtal BFO, like new, $139; BC348N, 115V AC, $60; BC-455 brand new, $12.95; stamp for list of tubes and parts for sale or trade. M. Marshall, 455 Washington Ave., Dumont, N. J.

SOUTHERN California: Transmitters and receivers repaired and aligned. Bandwidth, frequency, harmonics measured. Used ham gear bought and sold. Robinson Electronics, 2438 West Chapman, Orange, Calif. Tel. KEllog 8-0500.

DX-100 and Matchbox, both in gud condx: $130; NC-98, perfect, $90. Need college money. Sid McAulay, SAE Willamette 11, Salem, Oregon.

SELL: Heath AR3 w/Q mult., $30. 25% m.o. Balance ur address C.O.D. Robert Mann, Box 272, Oakham, Mass.

PROTECT Your receiver and transmitter from scratches, dust and lint with attractive Burch Gear Covers. These covers are made from a soft grey colored canvas. Be assured of higher trade-ins by protecting your gear with Burch Gear Covers. Specify make and model: 32S-1, 75S-1, 312B-3, 75A4, KWS1, KWM1, SX-101, HT-32, 75A2, 75A3, 32V, NC300, NC303, HQ-140-145-150-160-170-140X, GSH-11, Pacemaker, Viking 500, Navigator, Ranger, Adventurer, Thunderbolt, Courier. Send make, model number and dimensions if your gear is not listed. $3.95 prepaid in U.S.A. Burch Manufacturing Co., 1220 Locust, Des Moines, Iowa.

FOR Sale: Viking I xmtr, all TVI suppressed, guaranteed, VFO, Bud low pass filter A-1 condx. Must get $175: RME69 Rec., $50, in gud shape. Teirex Super Minibeam, CDR rotor, 52 ohm coaxial lines and connections and mast mounts, $50 (cost $80); D-104 mike, $8.00. Leaving air, all equipment in exc. shape. Call Charlie, W2KNG, SW 6-5658 between 6 & 7 P.M. New temporary QTH 18 North St., East Paterson, N. J. Prefer local deal.

ART-13 with crystal pre-amp. mic input, $35; SCR522 Rec. in cabinet, with pwr. supply, $20; Eldico TRI TV xmtr, 300 w. with Meissner EX Sig. Shftr, fine condx, $200; 28" enclosed cabinet with new blank panels, $20; Federal sig. gen. type 804 8-to-330 Mcs, fine condx, $100; GP7 Navy xmtr two tuning units with 24 DC to 110V AC 400 cy. pwer supp., $30; Eico 320 sig. gen., $10; RCA hi freq. sweep gen., Mod. 709B, $20; Navy test unit TS-182/UP, has 2" scope, $25; ARC-5 2-meter rc., all tubes, half conv. all parts, $6. All F.o.b. Cana, Va. Lonnie M. Utt, W4FNH.

COLLINS "S" Line, includes 75S1 receiver, 32S1 xmtr 516-1 heavy-duty pwr supp. Includes extra xtals to cover 10 meter band. All used less than 2 mos. $1100, or will trade for KW-1. W2ADE, 47 Condit Rd., Mountain Lakes, N. J. Tel. DEerfield 4-3331.

LATEST Eldico SSB transmitter plus 500 watt linear, $500; four new 4-400As, $20 each, Matchstick, Panadapter, beam rotator, compression amplifier, MM-1, cheap. Stamp for list. W4API, 1420 So. Randolph, Arlington 4, Va.

ALL excellent: Collins 70E-8A, PTO, $40; Hunter Band-It ganged exciter, $40; Ranger (sequence keying), $165; 4-250A, new, $20; two used 4-250A, $15 each. Complete LM-14, new, $50; Shure 730A (new cartridge), $5; B&W CX-40A, $10. National FMA-40 DC, $5. W8KML, 19199 Blake, Detroit, Mich.

FOR Sale: Complete Novice station: Globe Scout 65B transmitter with five Novice xtals, $45; Hallicrafters S-53 receiver, $45. All in new condition. Jac Holsman, 115 West 16th St., New York City, AL 5-3958.

2 MTR Communicator IIB, Rotator, 10 element beam, $160; Model 26 Teletype, table, 10 rolls paper, $75; TG-34A code keyer, 6 rolls tape, $20; new 700 watt 110V AC 12V DC gas generator, boxed, $140; new 22 el. 420 Mc. beam, 60 ft. lead-in, $10; RCA eng. tube manuals, volumes 1 to 8, $2.50; 29" reflector dish, $3; Thordarson 500 watt trans., 2400V CT, 1800V CT, $10; UTC Universal mod. trans., 55 watt, $5; Peerless Univ., Mod. trans., 20 watts, $3; Heathkit BE-3A battery eliminator, $10; 4 1/2" rack panel, 2 DB meters, 2 variable 44 Db pots., $12; Picket slide-rule, Mod. 803-ES, $12; E-V TV ant. amplifier, 4 outputs, $10; McElroy ink recorder, PRD-900-42, $10; Standard coil UHF-VHF TV tuner, $6; Std. coil VHF TV tuner, $5; RCA recorder motor with 78 rpm gear box, $2.50; 80 mtr. ARC-5 trans. $4. J. Christy, W6EHZ, 14553 Dickens St., Sherman Oaks, Calif.

SELL Globe Scout 65A, excellent condx, $60; Viking VFO122, $20, both for $75. Cash & carry. Jay Smith, 1742 N. Kedvale, Chicago, Ill.

FOR Sale: NC109, less than 100 hours use and new 100 Kc crystal kit. Both for $160. W2GS8, 209 Knapp Rd., Syracuse 4, N. Y.

250 Watt plate, modulator and bias supply. Has pair of 816s, pair of 523s. Output 1000V at 250 Ma., $40. K2GKU.

JOHNSON Viking II, manual, VFO, Matchbox, filter, xtal mike, 10 meter beam, all for $250. William C. Kidd, WITSH, 150 Maple St., Lexington, Mass.

FOR Sale: Elmac AF67, Gonset Super 12, Mosley Tri-Band mobile whip, plus mount; coax relay, Carter Dynamotor, plus all accessories. Complete mobile rig. Almost brand new, in perfect condition, $200 takes it away or swap for good receiver. Mel Ornstein, 29 Patton Drive, Bloomfield, N. Y. Tel. PI 3-6176.

SWAP: 4 x 5 Speed Graphic, anniversary Model, all complete. Want: SSB Gear or good linear with power supply. What have you? Col. E. W. Searls (Ret) U.S.A., K6QQI, 4725 Bridle Trail, Santa Rosa, Calif.

ALUMINUM for every Ham need. Write to Dick's, 62 Cherry Ave., Tiffin, Ohio, for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits.

FOR Sale: BC-348-N receiver, expertly converted, built-in AC and audio with speaker, $55. You pay shipping. Myrle Bockes, 903 Church St., Hannibal, Mo.

KWM-1, #770 for sale, $550; Leece-Neville, 12V 50A., alt. reg. and rect. 1 yr. old. Not surplus! $50. Glen Sneary, W5RYB, 307 S. Burdick St., Stillwater, Okla.

FOR Sale: Full-size Telrex 3-el. 20M beam mod. 503, $50, also UHF resonator 5-el. 10M beam, $25. Will ship. W9WHN, 424 3rd St., Lockport, Ill.

FOR Sale: Single channel radio control set; factory assembled, never used. Complete with boat, airplane with motor. Best offer over $55. Write for information: Harold Harrington, 2030 Reading Ave., West Lawn, Reading, Penna.

NC183D receiver with matching speaker, also built-in 100 Kc BFO, best offer. Write Mrs. S. R. Liszczak, 3115 Ridge, Highland, Ind.

76A4, with 0.8 Lc., 3.1 Kc and 6 Lc filters, serial 2533, perfect condx, $650. W6WZD, P.O. Box 761, Menlo Park, Calif.

B & W 5100 transmitter for sale, $275; SX-71, $125; HF 10-20 $45; 72 ohm MicroMatch, $25. Chuck Durrell, 511 Fairview Drive, S.E., Cedar Rapids, Iowa. Tel. EMpire 2-4414.

WANTED: ATD 20-meter transmitter unit, CRR-47211, also SCR-522 and BC-638A manuals. A. J. Coiro, #12 Wingfield Place, Alexandria, Va. Phone SOuth 5-4224.

FOR Sale: SX-100 in excellent condx, $200; DB-23, like new, $25. Will deliver within 50 miles, otherwise cash and carry. Leon Crain, K2EXH, 213 Nagle Ave., New York 34, N. Y.

COLLINS 75A4 with 3.1 Kc and 500 CPS filters and matching speaker. Very clean. Serial #3737. $550 or best offer. No trades. Henry Koert, K2VXF, 2 Chadwick St., Paterson 3, N. J. Tel. ARmory 4-7299.

SS4: Central Electronics 20-A factory wired with Q-1, new appearance, perfect condition, unusually good audio and suppression, $195.00; new C.E. 458 VFO complete with miniature power supply for maximum stability $24.95; 1 KW G.G. linear 4-837s band-switching, pi-net output, complete with power supply, professionally built-in compact cabinet approximate size of 20A, 75. Will ship. C. Brooner, P.O. Box 261, Morton, Ill.

FOR Sale: Novice rig, top shape, S38E and Globe Chief 90 with xtals, key, etc. $100 F.o.b. Glens Falls, N. Y. Landau, 21 Bay St., N. Y.

SOLA Constant voltage transformer, 2000W, $60; DX-20, $25; power transf., $2; pole pot, $7; coax, $4.00; 304TI, $5. Sam's 200 folders, $100. W7POS, 2319E. Indianaola, Phoenix, Ariz.

TRADE: Cameras, Rolleicord, Triotar 3.5 lens also Konica 35m, Hexar, 2.8 lens for transmitting equipment. Send offer to Edward F. Lubowicki, 60 Lloyd Ave., Rte #43, Nixon, New Jersey.

SELL: Elco HF20K amplifier, Heathkit BC1A AM Tuner; Heathkit Q-Multiplier. Working order, clean, reasonable. K2IKZ.

SALE: Gonset Monitone, used only few hours, $19; Heath Conelrad never used, only checked, $9; Hy-Gain 152MT-3 Minibeam, brand new, $55; will throw in free 5 ft. tower and guy wire. Sorry cannot ship beam. Come and get it. AR-22 rotator with control unit, brand new, $23; Heath balun coil, never used, $5; Heath S" speaker, $5 WA2IAR, 1060 East 39th St., Brooklyn 10, N. Y. Tel. DEwey 8-8777.

FOR Sale: SX-100 receiver, like new condx, excellent, $200. Bill Flapan, 6036 N. Francisco, Chicago, Ill.

COUNTRY Preacher wants V.H.F. 152A or Gonset Tri-Band converter at reasonable price. Would appreciate your surplus radio magazines. Rev. James E. Baker, R.F.D. #3, Orangeburg, S. C.

WILL Trade Knight kit 50 watt transmitter for SCR522 with AC power supply. Contact Clark Arquette, WV6GYB, 2120 Lyon St., San Francisco, Calif.

WANTED: One Kilowatt commercially-built transmitter, like Collins KW-1 or equivalent. Al T. O'Neil, Lake City, Minn.

KNIGHT Deluxe communications rcvr with "S" m.e.r., $95; Globe Chief 90A, $45; Eico plate modulator, $45. Whole rig plus 8 ham xtals and key, $175 FB condx. Gone QRO 88SB. John Sielke, K3HLU, Box 6000, Torresdale, Philadelphia, Penna.

***QST*, 1919 through 1928, some missing, total 96 issues; 1929 through 1958 complete run; CQ 1947 thru 1953 complete run; Radio 1936 thru 1942, some missing. Best offer. W8LR, 1235 N. Hayford, Lansing, Mich.**

SELL: Elmac PMR-7, AF-67, Elmac AC and DC supplies, mounting racks, 3d antenna, spring base, Z match, Bud low pass, relays, cables, etc. Everything you need for complete mobile-fixed set-up in gud shape. Best offer over $300 f.o.b. Orlando, Fla. Ellis A. Kruse, WA4IGW, 21 N. Parramore.

GLOBE SCOUT 680A and 755A VFO, both factory-wired, with relay. Excellent condition, best over $135. K2YTK, 12 Glen Eagles, Larchmont, N. Y.

GLOBE SCOUT — 65W, CW, 50 W fone. Factory-wired. Gud condx. $60 for quick sale. K2QYA, 14 Barnyard Lane, Roslyn Heights, L. I. Phone MA 1-2075.

RECONDITIONED Equipment! Terms — Trials — Trades! New Guarantee! Transmitters: 5100, $299.00; 5100-B, $379.00; 32V-3, $485.00; SSB-100, $395.00; Elenco 77, $369.00; Gonset 500W Linear, $199.50; SR34AC, $325.00; THS-50 (80-2M), $59.95; APS-50, $19.95; DX-35, $49.95; SB-10, $89.00; VF-1, $19.95; Pacemaker, $385.00; 6N2, $129.00; Phasemaster II, $199.00; LW-50, $39.50; Lysco 600, $69.00; AF-67, $139.00; dozens of Globe Scouts, Chiefs, Champs, Kings, etc. Receivers: S-53A, $69.95; SX-88, $429.00; SX-96, $189.00; SX-101, $319.00; HQ-129X, $149.00; HQ-140X, $179.00; HQ-150, $229.00; PRO-310, $449.00; Q Mult, $7.95; SW-54, $39.95; HRO-60T, $385.00; NC-98, $114.00; NC-125, $139.50; NC-183D, $309.00; NC-300, $269.00; RME-4350A, $185.00. Leo, W0GFQ, Box 811, Council Bluffs, Iowa.

FOR Sale: SX-101 with matched speaker, both like new, $250. Boyd Stepler, Jackson St., Millersburg, Ind.

75A4, number 5070, $575; Eldico 100F, new in January, 1959. $500. Both perfect condx. W2KOY, East Meadow, N. Y. IVanhoe, 3-3262.

MORROW MB565 transmitter MB6 rcvr, RVP 260B supply and cables, like new, $320. Johnson Viking mobile, $55, F.o.b. NYC. Bill, W2KOO, 3132 104th St., East Elmhurst, 69 L. I., N. Y.

SELL: NC183D with matching speaker, $250; Viking II with Viking VFO, $180. In like new condx. Deliver free within 200 mi. of Harrisburg. W3SAU, 1606 Chatham Rd., Camp Hill, Penna.

COMPLETE Station 75A4, KWS1 with heavy-duty composite power supply, in excellent operating condx, many xtras and accessories. Make me an offer and I might surprise you. Al Hyde, 77 Fairfield Rd., Cranston, R. I.

DX-40, Heath VFO, Eico modulator with cover. In perfect condition $105. Certified check plus freight. Also 10-meter beam, coax, mikes, relay, magazines. Boyd Kelty, 141 S. Aldrich Rd., Youngstown 9, Ohio.

SWAP DX35 with VFO ant. coupler, also ART13 British 303 rifle. Want 100 watt or more AM xmtr, K3JQO, 257 W. Main St., Somerset, Penna.

SELL: HQ-110C with spkr, perfect condx, $175. Kenneth Kellermann, K2ADE, 63 Hampshire Rd., Great Neck, N. Y.

SELL: Complete operating mobile rig. Elmac AF-67, Gonset G-66B, James Power Supply, Johnson loading coil. Turner mobile mike. WØNQZ, Oslo, Minn.

COINS. Catalogue value $175. Also Scout 65A, WRL VFO. Want DX-100 or Ranger, K3HTE.

FOR Sale: Collins 32V3, in mint condx. Not a scratch or mark of any kind on panel. New PTO unit, thereby giving original factory calibration. Guaranteed perfect in every way. Best offer. Judge. K7GCO, 202 S. 124th St., Seattle, Wash.

SELL: SX71, and R46 speaker, in excellent condx, $125. F.o.b. W2SBW.

SX-25 with matching speaker, clean, $45; B&W coax switch, $5; B&W low pass filter, $10; Heath grid dipper, $10; Heath SWR bridge, $10. John Kane, 27 School Lane, Haddonfield, N. J.

ANTENNA: Hy-Gain 18AV (10-80M) trap vertical, $45; Globe Scout 680A, Heath VFO, coax relay, $100. Clifford Bond, Elberton, Ga.

SUPER-PRO Hammarlund SP400SX receiver, complete with separate power supply and speaker. In gud condx. Make offer. Glenn Metzler, K3DHV, Manheim, Penna. R.D. #1.

SELL: Viking II with matching VFO, both in gud condx, $179. Ronald F. Blackburn, KØGVO, R.R. #3, Lawrence, Kansas.

SELL: NC-125 w/spkr, $125; Harvey-Wells T8S50C w/AC pwr supp, $85; Johnson Model 122 VFO w/home brew pwr supp, $40; National SW-54, needs realignment, $33; Shure 708A xtal mike w/stand, $10. $285 takes all. Living in an apartment, selling entire station. W8FVC, 234 Fulton, Sandusky, Ohio.

SELL: Elmac AF-67, $110. Pierson KE-93 mobile receiver with 110 AC and 6–12 DC power supplies, $275. C. Lindemann, W1MLM, Random Road, Old Greenwich, Conn.

TRADE Ham rotor, tower, cable for receiver. K5LRR.

CITIZENS Band vertical antenna, $12.95; Ham 6–80 meter vertical antenna, $16.95; 11,000 sold; DX on low power, guaranteed; send check or money order, shipment immediately express collect. Valuable antenna catalog free. Gotham, 1805 Purdy, Dept. CB, Miami Beach, Fla.

SELL Or trade: Two 304TH, new in crates; Older Brush tape recorder with manual, needs adjustment; Pentone tape dec. with motor, manual; Ektotape deck with motor, manual; Gates broadcast type limiter, manual; older RCA broadcast type frequency monitor, two large units with manual; xtal for 910 Kc, several BC1206 Beacon receivers with tubes, $4.00; two teletype polar relays, eight 872; complete mobile installation: Morrow 3BR5 10, 20, 80 converter, new Mosley Tribund whip with mounting, Motorola T69-20A transmitter, with dual Vibrator power supply, mike, control panel, antenna relay, cables, all manuals and cables 807 final xtal). Make offer. Want: Good communications recvr, transmitter. BC221, cash. Brewer, WØAG, 2208 11th Ave., Greeley, Colo.

QSLS. $1.00. Riesland, Del Mar, Calif.

SSB20A Central Electronics exciter with voice-control, CE458VFO plus excellent linear amplifier with 'scope, all circuits metered individually, plus RF meter, all enclosed in small cabinet. Can't ship. $325. Large 20 meter Telrex antenna, late model, in exc. condx. $75. W2JMH, 23 Locust Ave., Eatontown, N. J.

SWAP AR-3 for Heath, Eico, Knight, grid dipper, Wa2FFC, Ed Burke, R.D. 3, Box 195, Millville, N. J.

75A-3. Brand new tubes, with mechanical filter: $375. DX-100: mike, Dow-Key relay, extra tubes, $199; Hornet TB-3A Deluxe Tri-bander, one feed line, cost $130; AR-22 rotator, cost $30. Sell beam and rotor for $99. Mon-Key automatic keyer; cost $40. Sell $25. Dick, W7CXW, 2445 S.W. Arden Rd., Portland 1, Oregon.

FOR Sale: New Tecraft 2M. converter, $28; National HFS recvr, like new, $65; and the following items are in like new condx, and I will take any offer near half the original cost: Hickok 539A tube-checker; TV generator units, 690, 691, 695; Hycon color bar & dot generator model 616; Kirby flyback trans. Checker. Robert Ireland, Pleasant Valley, N. Y.

SSB Men! CE 20A exciter, Run "B" with QT-1, and CE 458 VFO, all in 1st class A-1 condx, only $175; prepaid upon receipt of m.o. or cashier's check. W4BXV, Tom Rozier, Box 123, Quitman, Ga.

FRA Frequency Shift converter, $35; Measurements Model 71 square wave generator, $125; Weston model 981 tube checker, $165; G.E. Golden Coax spkr, $25; Hysteresis synchronous dual speed 600-1200 RPM motor, $15. WA2FZH, 238 North Park Drive, Woodbridge, N. J.

INSTRUCTIONS for building an 800 watt grounded grid amplifier using three 811A tubes. Using ferrite filament choke and band switching coils in plate circuit makes band changing fast and easy. I use mostly surplus parts and wind coils which makes cheap construction. I give instructions with pictures and circuit and names of firms I got material from. All this I will mail to any amateur for $2.50. I use this amplifier at my amateur station W4ALG. Meade Johnston 2625 Broad Street, Tuscaloosa, Alabama.

SALE: Elmac AF-67, $130; Elmac AC power supply, PS-2V, $25; New Wollensak tape recorder, Mod. 1500, $160. WØLQY, 1225 No. Jefferson, Mason City, Iowa.

COLLINS KWM-1, Ser. 848, new condx, with AC supply, $575. Koch, W6NRT, 703B S. Walnut, Inglewood, Calif.

CANADIANS! Selling out HT32, 75A3, Johnson Courier, Matchbox, Gonset Mobile converter, Jennings vacuum capacitor. J. A. Masterson, 82 Cherovan Dr., Calgary, Alberta, Can.

FOR Sale: Amateur station of WØECB. Separate kilowatt and 100 watt phone transmitters with schematics. Semi-professional wiring, quality parts, commercial cabinets. One price for all, $585. No shipping. Write for performance demonstration. P.O. Box 386, Clinton, Mo. Phone TU 5-5209.

BARGAINS: Reconditioned and guaranteed. Shipped on approval. Easy terms available financed by us. Hallicrafters S38, $29.00; SX99, $119.00; SX96, $159.00; SX100, $199.00; S40B; S85; SX71; SX88; SX101; HT32; GPR-90, $349.00; Hammarlund HQ100, $129.00; HQ110, $189.00; HQ129X; HQ140X; HQ140XA; HQ150; HQ160; HQ170; National SW54, $29.00; NC98, $89.00; NC300, $279.00; HRO60, $565.00; Johnson Pacemaker, $295.00; Ranger, $179.00, Viking II, $179.00; Valiant, Thunderbolt, Viking 500; Heath DX35, DX40, DX100; Central 20A, $159.00; Collins 75A1, 75A2, 75A3, 75A4, 32V1, 32V2, 32V3, KWM1, KW21; Globe; Gonset; much other equipment. Write for list. Henry Radio, Butler, Mo.

KW8-1 and 75A4. All factory modifications. Reduction knobs, spare 800 cycle filter and final tubes. Pick up this beautiful rig for $1750. KØDNI, 2990 15th Ave., Marion, Iowa.

CRYSTALS Airmailed: Mobile, Net, SSB, Commercial, Citizens etc., FT-243, custom finished .01%, any kilocycle 3500 to 8600, $1.49, novice, 99¢. 1700 to 21,500, $1.95, add 60¢ per crystal for HC-6/U hermetic crystals. Citizens, all channels .005% HC-6/U $2.95; FT-243, $2.49. SSB Package, June 1958 *QST* SSB Handbook fundamental mixer sets, FT-243, $9.95; HC-6/U, $12.95; matched filter sets, $6.90. Airmailing 9¢ per crystal. Crystals? Ask us, we have them all. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

RECEIVERS: National NC-57, not too sensitive on 6M, otherwise good, $25; BC-312M with P/S, $20; both with manuals. You pay shipping. W3CQX, 21 East Antietam, Hagerstown, Md.

75A4/spkr, new condition, $575, KWS1, new condition, take Collins gear or HT32 in trade. Price $1400. Have 800 cycle 75A4 filter, $37.50 WØVNF, Box 105, Kearney, Nebraska.

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FOR Sale: T8S-50-D Bandmaster transmitter and matching AP8-50 power supply. Globe linear, Hughes, 1421 Cherry St., Wausau, Wis.

DX100 w/mod., $165; SX96 S8B recvr, $150; DX35, $40; VF-1, $15; AM-1, $10; SCR522 xmtr panel mount, $25. Manuals. All f.o.b. operating condx. K4GRO, Doyle Nicely, 1006 11th Ave., Ct., Decatur, Ala.

IF You have a background in Electronics, but are having trouble passing commercial FCC phone exams, my 13 years' experience as chief instructor of electronics school can help you over the hump. Not a course. Write me personally for free literature. Wallace Cook, P.O. Box 10634B, Jackson 9, Miss.

COLLINS KW-1 in excellent condx; original owner. $2500. Collins KW8-1, like new, and used only 6 months, $1300. W6NX, Frank Quement, 2030 Hurst Ave., San Jose, Calif.

4–250A/5D22. New, includes socket. $12; Lightning bug, $12; 750VDC 250 ma. power supply, components brand new, $20. W3MTF, 442 Market St., S. Williamsport, Penna.

WANTED: LF coils, Millen GDO; 5IJ4; UTC S71; HT32A; VVC 10-400$\mu\mu$fd; B&W 852;4-1000A socket, chimney & tube; Millen 90672 bridge; Jones MicroMatch; Johnson KW Matchbox. K4TML, 1712 SE 14th St., Ft. Lauderdale, Fla.

WANTED: 304TL-TH or other high dissipation types. Also KWM1, HRO. Ted Dames, W2KUW, 64 Grand Pl., Arlington, N. J.

MOBILE Rig complete: AF67, PMR6A, PSR 6–12 power supply, Heath MP1 mobile power supply, Leece-Neville 12volt 60 ampere charging system, coaxial relay, Shure mike, heavy duty all-band antenna system. Many extras. Wired for push-to-talk with all cables and relays. First $300. NC300 with xtal calibr., $250. Original packing. 600 watt phone rig, $50. Weiss, K2QLV, 3803 Walnut St., Philadelphia 4, Penna.

WANTED: Inexpensive, good clean radio gear for 500 watt or more, usable for 6 meter. Need: R.F. amplifier, modulator, and H.V. power supplies. Assembled, home-brewed or parts. State price, condx, and other details. C. A. Dudzik, W8KWK, 131 Ogonts Trail, Sandusky, Ohio.

TRADE: Transmitters and components, many heavy duty transformers and chokes for standard make HO gauge model railroad locos, cars, tracks, buildings, power units, signal and control equipment. H. C. Barker, W1UFJ, 8 Meadowview Rd., Foxboro, Mass.

SELL: 2–6 mtr. 5-elm. beams, mast, TR-4 rotator, RG8U coax and cables, $35. Springfield 6 mtr. walkie-talkie, $35. Call K2SHQ, AX 6-8121.

TRANSISTORIZED six meter converter. Small, compact, sensitive, easy installation. Crystal controlled, $29.95. Also limited quantity of VHF transistors at experimenters' prices. Guaranteed minimum Alpha cut-off 100 megacycles. Oscillates much higher. Perfect for converters, dippers, etc. $2.65 each. Robin Radio Co., 13229 Red Fern Lane, Dallas, Texas.

SELL: Gonset G50 less than two months old, $265; VHF 152A, in perf. condx, $35; HQ-170C, new condx, $275. Will ship. Sam Berlin, 565 Crown St., Brooklyn 13, N. Y.

SELL: Gonset 6-meter Communicator III, $190; Gonset 6 meter linear amplifier, $110; both for $285; National VFO-62, $45; P&K Electronics 504C 6 meter transmitter with 6, 12 and 15 v. Universal PS, $65 (equipment shipped from Dallas, Texas). K5BLI, Lt. Ewing, 57th FIS, APO 81, New York, N. Y.

SACRIFICE: Johnson Ranger, factory-wired. Push-to-talk includes D-104 mike, antenna coax relay, cost $392, $199. Gonset 20 meter bow-tie, 50 ft. coax, $12.50. Will ship, but prefer local deal. Don Cordray, 6803 Amestay Ave., Van Nuys, Calif.

WE Have immediate vacancy for assembly-line foreman who knows basic communication electronics. The man should have at least two years of technical training and three years of high-speed assembly line supervisory experience. Applicant must be willing to locate in Utica. Many benefits. Outstanding starting salary. Send resume to R. J. Whitehouse, General Electric Co., Radio Receiver Dept., 1900 Bleecker St., Utica, N. Y.

SELL: Pair 4-250As, $20 each. 813, $5. F.o.b. Hartford, W11KE % ARRL, West Hartford, Conn.

SELL: Used S53A receiver, like new, recently overhauled. First offer over $55.00 takes it! Great for beginners! Canizares, 210 Grandview, Yonkers, N. Y.

IMPORTANT! Sales and Engineering positions at Hy-Gain Antenna Products (World's largest manufacturer of Communications antennas"). Contact Mr. Andros, Phone 2-4320, 1135 North 22nd St., Lincoln, Nebraska. Applicant must be active, licensed amateur radio operator.

WANTED: Lampkin freq. meter and modulation meter. Willing to purchase or swap for ham gear. S. J. Semel, W2SHE, 87 Westmont Ave., Elmira, N. Y.

SELL: Gonset Linear 6M amp. In excellent condition. White cabinet model. Best offer over $100. Donald Klein, 1725 Westover Rd., Clark, N. J.

COLLINS KWM-1 Number 337 with AC power supply, $695 F.o.b. Shreveport, Louisiana, by Louis M. Gregory, W5FLZ, 3025 Mooringsport Rd.

SELLING Out, like new 75A4 with 3.1 and 800 cycle filters KWS-1, $1150. Both $1700. Brand new Drake 1A, $240. Adams full KW linear, with power supply, $350. S. Schlitt, W2BBV, 49 Frum Ave., Yonkers, N. Y.

SALE: One B&W model 852 tank coil: $25.00. W4JUR, 1200 Prince Edward St., Fredericksburg, Va.

SALE: Heath Apache, professionally assembled: S.W.R. meter, VOX, Matchbox, NC183D, all in like-new condx. W2BAA, Ballner, 22/12 128th St., College Point 56, N. Y. Tel. Flushing 9-4009.

SELL: 51J1, $400; HT32, $400. W2ADD.

ELMAC AF-67 transmitter with 6 meters instead of 160. Excellent condition, $125. Also second AF-67 in gud condx, $110; PMR6A receiver with 12 volt DC supply, $70. W9BYX, 205 Evergreen, Elmhurst, Ill.

SELL: Transistorized Q multiplier, $8: surplus: Dupont 3" oscilloscope, $15; Collins 6 meter transceiver and handset, 5 watts (24 tubes) revr needs alignment. Highest bid. All plus shipping fees. Meter list upon request. WA2EBR, Fred, 29 Chestnut Hill Dr., Murray Hill, N. J.

HALLICRAFTERS: S-38E practically new condx, never used! $39; Heath QF-1 in exc. working order, $7.50; 15 and 10 mtr. Preselector with 6AK5 tube, $4.50 BC459. VFO controlled, converted to 20 and 40 meters, 150 watts, c.w. $10. K8KRM, 4219 Clybourne Ave., Cleveland, Ohio.

FOR Sale: Globe Scout 680, factory-wired, Heath VFO, both like new condx; best offer. BC221, AC supply, with original calibration book, in excellent condition, $65. W2TGD, 150 Chittenden Ave., Tuckahoe 7, N. Y.

FOR Sale: Late model 75A4, used very little and in excellent condition. Best offer over $550. W4IGE, 701 Longbow Rd., Winston-Salem, N. C.

WANTED: Free ham equipment for high school radio club. Dennis Luchterhand, WV2END, % L. W. Traver, Edgemont High School, Scarsdale, N. Y.

SELL: BC-221T and LM-14 frequency meters, $45 each; BC-348 O receiver, converted for A.C. but without power supply, $30. A. E. Keel, K5STO, 2806 Little John, San Antonio 9, Texas.

SELL: TBY-4 (10 M. transceiver). KØPTV, 308 M. Garnavillo, Anamosa, Iowa.

FOR Sale: HQ150, $240; DX100, $170; CD antenna rotor Mod. AR-22 and indicator, $20. All items with manuals. M. Vassallo, 205 Landau Ave., Floral Park, N. Y. Tel. PRimrose 5-7311.

TECHNICIANS-Novices-CD Groups: Now you can get on 2-meter FM with the finest equipment at a fraction of its original cost. ¾ watt output pack sets. Can't be told from new, with 20 tubes, handset, antenna, new canvas carrying case, $64 each. Tuned to any frequency from 144–174 Mc with xtals and batteries, $110 each. Also available for 110 A.C, 6 & 12 DC operation. Also brand new pack sets, any frequency, $185; reg. price, $375. Also Motorola 5V and 30D transmitter-receivers low or high band, mobile and fixed, complete with tubes, $40 and up. For info on these and other good values, write Skyline Electronics 6022 N. Rogers, Chicago, Ill.

HQ-140XA late series with hammertone gray cabinet and plastic S meter. Excellent in all respects, $175. No trades except up on 75A4, SX-101 or HQ-170. Bob Blaney, W9FRU, RR 4, Decatur, Ind.

SACRIFICE: National 183D matching speaker, $225. Mallory 6V battery eliminator, $20, both in exc. condx. You pay shipping. Piekilo, 400 Brook St., Linden, N. J.

FOR Sale: HRO-60 with accessories, $400, new Viking Thunderbolt, $450; Viking ranger, $165; D-104 mike push-to-talk, $20; new Vibroplex key, $10; Johnson Matchbox, $35; Johnson VSWR bridge, $5; Micromatch 521VSWR bridge and meter, $20, new DY-12 dynamotor, $5; Eldico TVI filter, $5. I will pay shipping. WØEWQ, 7332 Nall, Overland Park, Kansas. Tel. HE 2-9782.

DRUMS. Complete set, in fine condx. Will swap for DX100 or other gud xmtr. D. Goldstein, 734 Vermont St., Brooklyn, N. Y.

MADE A bid at Navy Surplus Sale. Have stuff running out of my ears. 0–30 volt DC meters, 2½ in. new, $2.00; Ohmite "Dividohm" resistor, 5 Ohms, 160 watts, the perfect item to use for 6 volt equipment on 12 volt cars. New, $1.00. Hickok 632 audio signal generator, gud condx, $20; Prop pitch motors in gud condx, $20; full wave bridge rectifiers input 68 volts output 51 volts cont. 1.6 amps, new, $2.50. Arc 5 racks, new, $1.00. Check with order. Sol Herzog, K4YMS, Box 6, Millington, Tennessee.

KW Plate transformers 3000–0–3000 VAC, 1.2 amp. 115V Pri. Wt. 110 lbs, Stancor: also 1500–0–1500 VAC, 1.5 amp. 220V, pri. Wt. 140 lbs. Amertran $35. F.o.b. K9HXV, Carl Shogren, 5916 N. Artesian Ave., Chicago 45, Ill.

SPECIALLY designed, easy to install, three-section, heavy-duty, light weight heli-welded aluminum spiders for Tri-band single transmission line quads complete with stainless steel straps, also imported, fiberglass treated and wrapped bamboo spreaders. All guaranteed one year. Write David Traer, W4AZK, Caribbean Rd., Naples, Fla.

WANTED: Late 75A4 in new condx, with spkr. Give serial number and filters included. All letters will be answered. K4SGU, Agnes Johnston, 5115 14th St., North, Arlington 5, Va.

QSTS for sale, good to excellent, June 1936 to date. Pick up or express collect. Best cash offer. George Brodie, 715 South Madison, La Grange, Illinois.

WANTED: Ham gear. Will swap American Jurisprudence, Hughes Federal Practice, and Winslows Forms of Pleading and Practice. What do you have? Bob, K3ILH, 4792 Doverdell Drive, Pittsburgh 36, Penna.

K.W. Plate transformers, 3000–0–3000 V.A.C. ½ amp., 115V pri. WT 110 lbs., Stancor: also 1500–0–1500 V.A.C. 1.5 amp. 220V pri. wt. 140 lbs. Amertran, $35. F.o.b. K9HXV, Carl Shogren, 5916 N. Artesian Ave., Chicago 45, Ill.

FOR Sale: Two Hallicrafters receivers, S-38 with S meter, $40, also S-38B without, $30. John Fischer, KN9RAO, 307 S. Elmwood, Waukegan, Ill.

SELL: 88B Receiver and transmitter. Revr is NC-101X with a slicer. Works perfectly. Transmitter in good-looking cabinet. Exciter is 20A in 1st class condx. Homebrew final is grounded grid using four 837s or 1625s (mod.). VFO also mounted in cabinet. Rig now in use regularly. Worked all over the world on 20 meters. Will not ship. Come and get it! Price: $375.00. John V. Doughten, W3LV, 1105 Arrott St., Phila., Penna.

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As the old greeting-song goes, "The more we stick together, the happier we will be." The more members your League has, the more prestige it enjoys; the more prestige it has, the better it can protect our privileges; the better it protects our privileges, the more fun you and I get out of ham radio. Start your own membership campaign soon.

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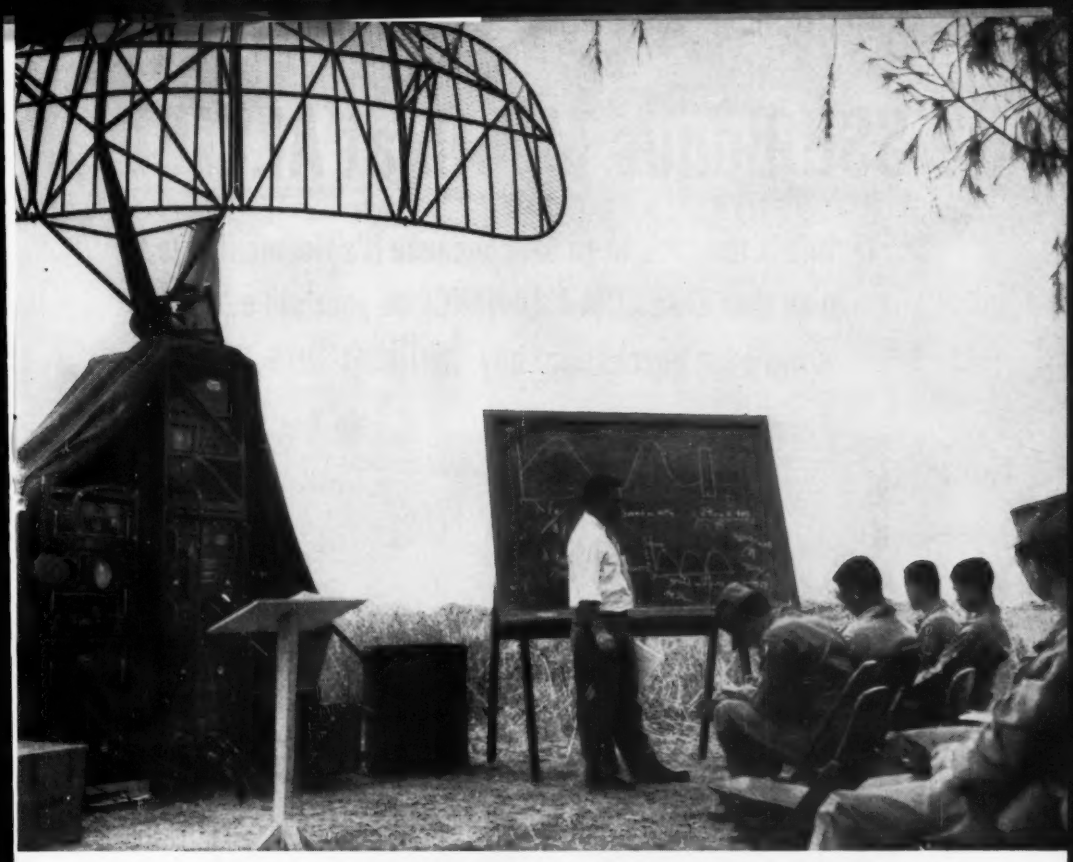

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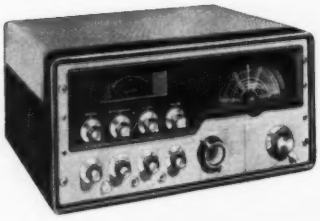

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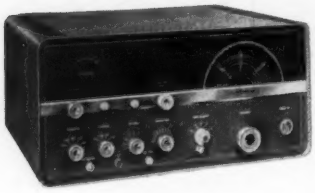

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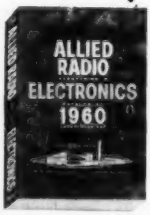

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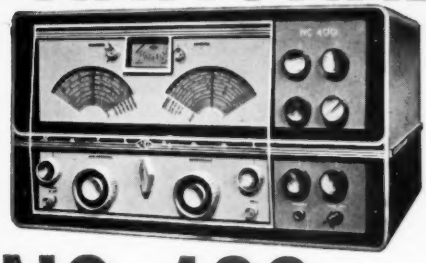

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The NC-400 is a modern, multiple purpose, general coverage receiver. Tuning range is 540 kc to 31 mc in 7 bands, with dual conversion on all frequencies above 7 mc. Its unique design provides maximum flexibility of operation to satisfy a wide variety of communications requirements.

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FREQUENCY RANGE:	GENERAL COVERAGE
Band 1	.54– 1.1 MC
Band 2	1.1 – 2.1 MC
Band 3	2.1 – 4.1 MC
Band 4	4.1 – 7.0 MC
Band 5	6.9 –12.2 MC
Band 6	11.8 –20.4 MC
Band 7	19.6 –31.0 MC

NOTE: Bandspread dial provided with 0-100 logging scale and calibrated for 80, 40, 20, 15 and 10 meter amateur bands.

FREQUENCY STABILITY: Long term stability after warm-up –.002%

SENSITIVITY: 1 microvolt for 10 db signal/noise ratio

SELECTIVITY: 4, 8 and 16 kc positions provided with 6 tuned circuits. 3.5 kc wide upper and lower sideband positions provided with 14 tuned circuits. 3.5 kc sharp position activates plug-in crystal filter providing 5 additional degrees of selectivity below 3 kc plus phasing notch. Plug-in accessory available which will provide front panel selection of three mechanical filters without modification of receiver. Proper choice of filters will enable selection of bandwidths from 500 cycles to 16 kc, or will enable filter type of sideband selection from front panel.

SSB PROVISIONS: Separate SSB heterodyne detector uses pentagrid converter and separate beat oscillator. Beat oscillator may be crystal controlled. Special "fast-attack-slow release" AGC circuit. Sideband selection accomplished by exclusive, new National passband switching techniques. In the event of commercial-type SSB reception, single sideband mechanical filters may be installed and switched from front panel.

FIXED CHANNEL OPERATION: HF oscillator has 5 crystal sockets for use in fixed channel operation. Channels may be selected by front panel switch. In addition, HF oscillator may be controlled from external master oscillator selected by front panel switch. "S" meter "Tune" position permits rapid tuning of receiver to crystal controlled channel.

DIVERSITY PROVISIONS: Basic receiver may be operated from master oscillator as noted above. An accessory Diversity Modification Kit (NC-400 DMK) allows choice of internal or external control of all oscillators. Rear panel selector provisions make possible use of any receiver either as master control, or slave fed from other oscillator sources. IF, detector and AGC outputs available for feed to external loads or combiners.

POWER REQUIREMENTS: 110-220 volts, 50-60 cycles AC

MANUFACTURER'S SUGGESTED LIST PRICE: $895.

OPTIONAL ACCESSORIES:

1. XCU-400 crystal calibrator. Output frequencies of 100 kc. and 1 mc.
2. NTS-2 matching speaker
3. NC-400 DMK diversity modification kit
4. NC-400 FH mechanical filter housing

*Manufacturer's suggested list price. Sold only by National Co. Franchised Distributors

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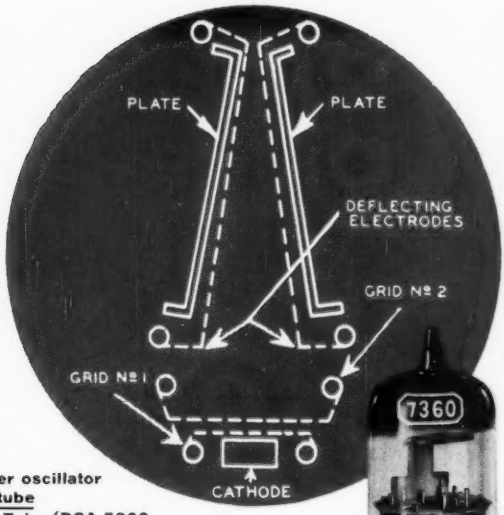

Shown actual size

- **Balanced modulator-carrier oscillator functions within a single tube**
- **Product-Detection in One Tube (RCA-7360 needs no separate oscillator)**
- **At least 60 db of carrier suppression in balanced-modulator applications**
- **At least 40 db suppression of oscillator signal in balanced-mixer applications**
- **At least 80 db of carrier suppression in filter type SSB exciters**
- **"Stay-put" circuit tuning over a wide temperature range, and throughout tube life**
- **Push-pull rf or af output for single-ended input – with one tube.**

Specifically developed for SSB and DSB suppressed-carrier rigs, RCA-7360 is the small-but-mighty tube that can "double-up" on a number of exciter functions at frequencies up to 100 Mc. It simplifies circuitry—makes it practicable to use inexpensive components.

Here's how it operates! The cross-section shows the main elements of the RCA-7360. The single flat cathode, control grid, and screen grid form an electron gun which generates, controls, and accelerates a beam of electrons. The total plate current to the two plates (at a given plate voltage) is determined by the voltages applied to the control grid and the screen grid. This total plate current varies with the bias or signal voltage on the control grid as in any conventional tube. The division of the total plate current between the two plates is determined by the difference in voltage between the two deflecting electrodes.

RCA-7360's are now available at your RCA Industrial Tube Distributor. For a technical bulletin on RCA-7360, see your RCA Industrial Tube Distributor. Or write RCA, Commercial Engineering, Section K-37-M, Harrison, N. J.

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